A CHILTON PUBLICATION

the Iron Age

E NATIONAL METALWORKING WEEKLY

May 22, 1952

NTS PAGE 2

OF MICHIGAN
AY 22 1952
ENGINEERING
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Modern high-speed Cold Mills
designed and built by MESTA

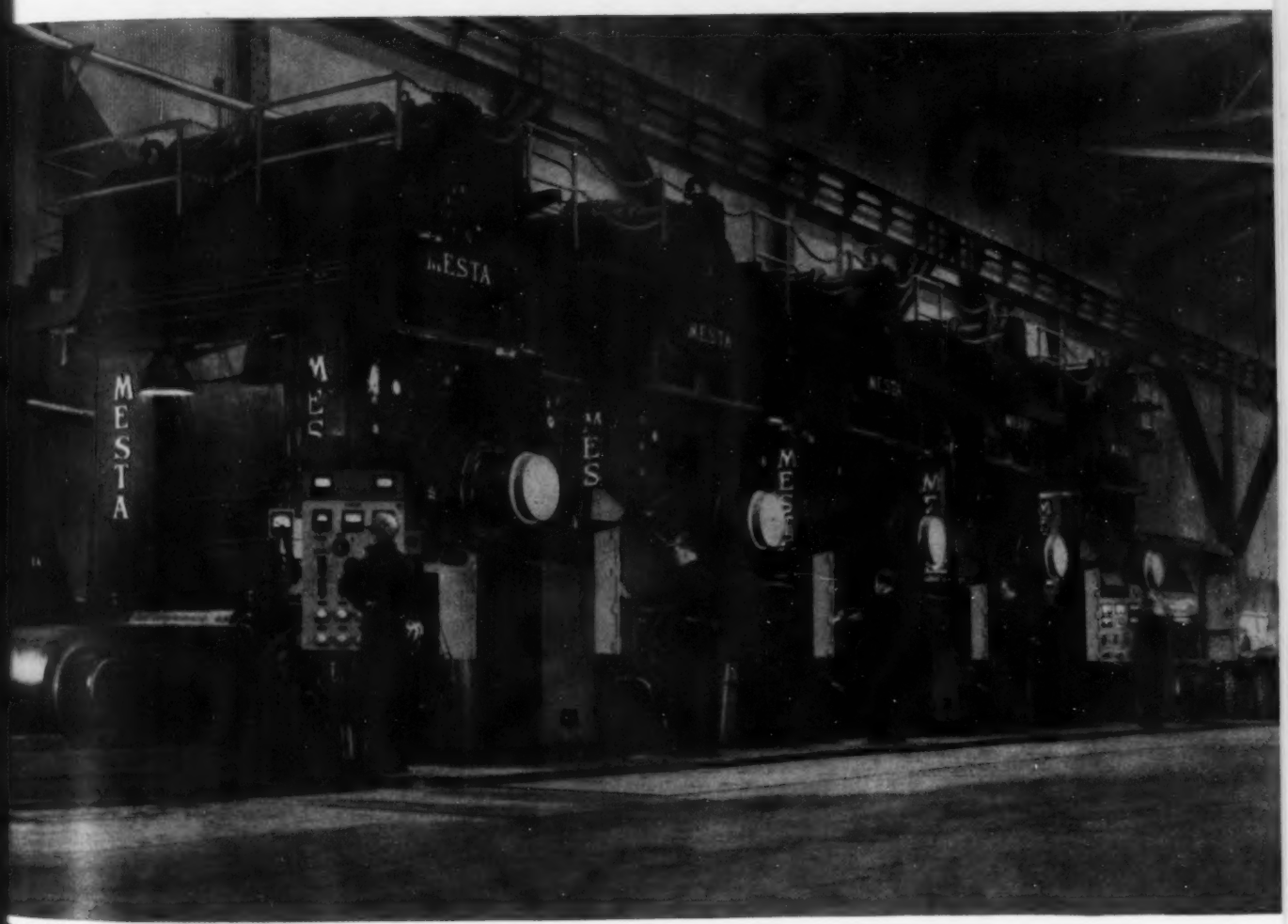

Photo by E. D. MESTA

Mesta 56" Four-High, Five-Stand Tandem Cold Mill installed in a Large Canadian Steel Plant.

DESIGNERS AND BUILDERS OF COMPLETE STEEL PLANTS
MESTA MACHINE COMPANY · PITTSBURGH, PA.

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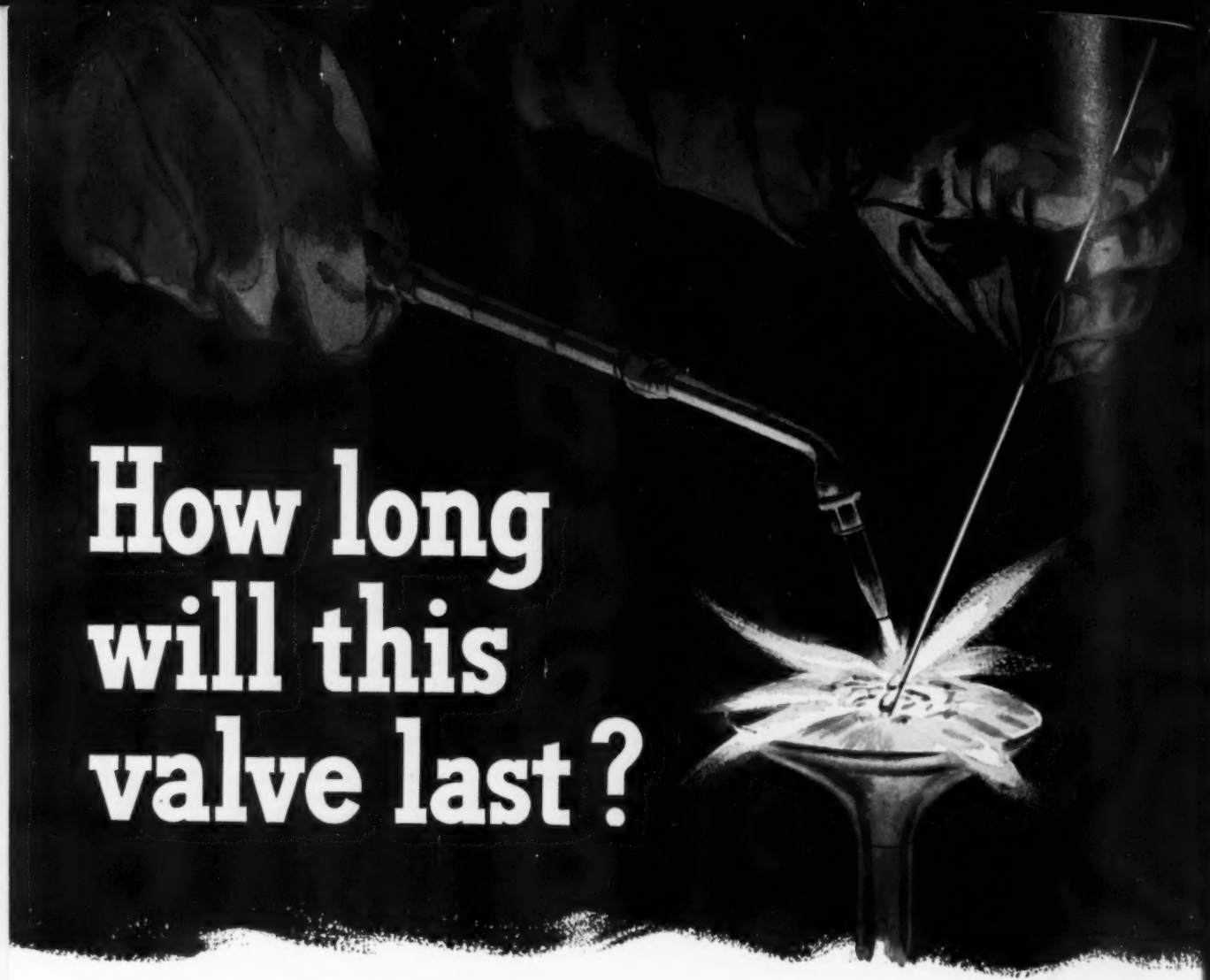
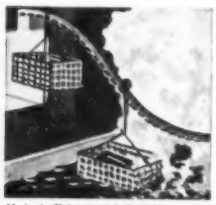


How long will this valve last?

Hoskins Chromel-Alumel thermocouple alloys accurately register exhaust temperatures of jet aircraft engines.

Heating elements made of Hoskins Chromel give long life service in industrial electric furnaces, home appliances.



Hot stuff for hot jobs! Hoskins Alloy 502 is widely used by industry for many heat resistant mechanical applications.

You're looking in on a life-saving operation . . . one that's being performed on an engine valve. Not an ordinary valve for an ordinary engine. But a valve destined for long, hard service in an aircraft, tank, or heavy-duty truck engine. A valve that must be made to stand up under extremely severe operating conditions . . . high temperatures, for long periods of time, plus the destructive corrosive action of hot exhaust gases.

And what's responsible for long valve life under such gruelling conditions? Nothing less than Hoskins Alloy 717 . . . a closely controlled nickel-chromium composition developed especially for just such tough and vital service. It's highly resistant to heat . . . immune to the corrosive atmospheres created by combustion of high octane fuels. What's more, it's readily applied by fusion to form a non-porous protective facing over the basic valve forging.

But 717 is only one of several specialized nickel-chromium alloys developed and produced by Hoskins. Among the others: Alloy 502 . . . known throughout industry for its dependability on a wide range of heat resistant mechanical applications. The Chromel-Alumel thermocouple alloys . . . unconditionally guaranteed to register true temperature–E.M.F. values within specified close limits. Spark plug electrode alloys which have become universally accepted standards of quality and durability. And, of course, there's Hoskins CHROMEL . . . the *original* nickel-chromium resistance alloy used as heating elements and cold resistors in countless different products.

HOSKINS

MANUFACTURING COMPANY

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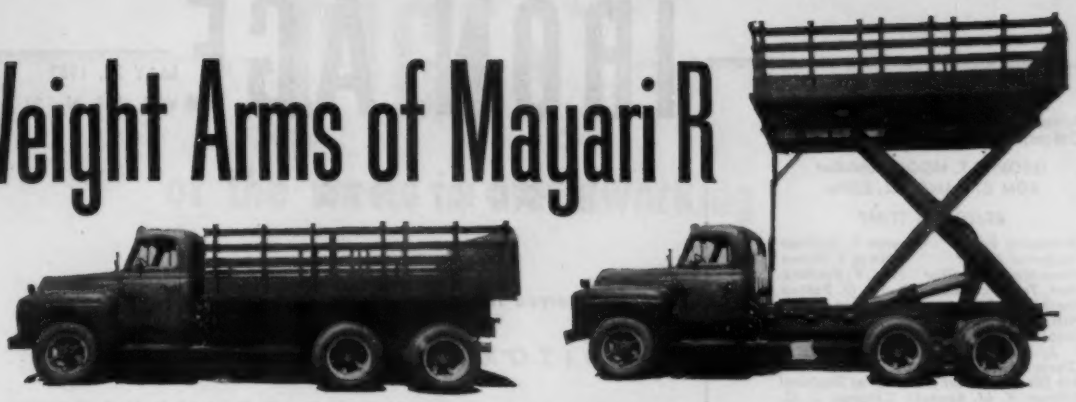
Chromel® NICKEL CHROMIUM WIRE

Light-Weight Arms of Mayari R



LIFT THESE HOIST-TRUCK BODIES

The main hoist arms that raise and lower these heavy-duty hoist-truck bodies are an interesting example of design with low-alloy, high-strength Mayari R steel.

Used for loading and unloading cargo-carrying aircraft, these trucks eliminate any need for ramps or special hoisting equipment. The bodies, either empty or loaded, can be raised to the level of the plane floor and lowered to the level of the truck bed in a few seconds.

The main hoist arms that support the body are subjected to considerable bending moments as well as column stresses when heavy cargo is being handled. The designers used Mayari R to reduce the bulk and sections of these arms without sacrificing the necessary strength.

Mayari R has the superior mechanical properties needed for this kind of application. It has a yield-point of 50,000 psi minimum, almost double that of structural carbon steel. In addition, it has an endurance limit of 50,000 psi. Higher working stresses can be used with safety.

Mayari R is used in the as-rolled condition, eliminating any need for heat-treatment. It can be fabricated and welded by any of the methods used for carbon steel.

More information on this versatile grade of steel is readily available. Write or phone for a copy of Mayari R catalog 259.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

Heavy-duty hoist-truck bodies built by A. Cresci & Son, Inc., Vineland, N. J. The arms that lift these bodies are made of Mayari R.

Mayari R *makes it lighter... stronger... longer lasting*

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IRON AGE

MAY 22, 1952
VOL. 169, No. 21

THE IRON AGE

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DIGEST

of the week in metalworking

PAGE 73 **RUSSIAN TRADERS BUY STRATEGIC GOODS**
The Russion Iron Curtain has convenient trapdoors that permit an influx of Free World goods. Much of the trading is in "peaceful" items but the Reds are getting strategic goods. American steel worked into finished machines is slipping into Russia. Several ports are chinks in U. S. armor.

PAGE 78 **STEEL CAPACITY SPURTS UP IN MIDWEST**
Midwest steel producers are continuing expansion plans despite heavier loads of taxes and lower earning. A few plans may have died aborning but the steel increase this year still is sound. Youngstown Sheet & Tube recently fired up the first of four openhearths. Republic builds a tube mill.

PAGE 79 **REYNOLDS DEDICATES ITS ALUMINUM PLANT**
Reynolds Metals Co. officially opened its new South Texas aluminum plant last week with a dedication ceremony. This potline will increase U. S. aluminum producing capacity by 40,000 tons annually. Reynolds now plans a second similar line. The plant is seen as attracting industry to the area.

PAGE 80 **THE TIMID BUYER DOESN'T RUSH TO STORES**
The timid buyer edged his head a fraction of the way out of his fortress of sales resistance last week with end of Reg. W curbs on credit. But his buying spirit was cautious and many retailers of appliances and autos were disappointed. Banks did not help out, standing conservative on credit.

PAGE 80B **HOW WAR CONTRACTS ARE RENEGOTIATED**
Renegotiation Board Chairman John T. Koehler describes for IRON AGE readers the principles and practices of renegotiation. An emergency measure, it is not directed at fair profits. No precise formulas are used, but each case is considered on its merits. Special factors are allowed.

PAGE 94 **REG. W'S END STARTS AUTO OUTPUT RACE**
Within the leeway allowed by government production quotas auto companies are starting an output race resembling that of the good old days. Cause is end of Reg. W curbs on installment buying. Industry is now hoping that other controls will meet a similar end. Model changes may come later.

PAGE 99 **RFC TIGHTENS PURSE STRINGS ON LOANS**
Steel companies and other heavy industries are finding it more difficult to get loans out of Reconstruction Finance Corp. RFC men deny this is due to a new tough trend and say the rash of rejections is just coincidence. Last week RFC turned thumbs down on loan tries of two steel firms.

PAGE 117 **AUTOMATIC TRANSFER SHELL FORGING LINE**
Fully automatic high production hot forging shell line has proved successful. No manual labor is required from the time the hot billet leaves the furnace until the shell drops out, completed, on a conveyor belt at the end of the line. Air-driven transfer equipment is electric-controlled.

PAGE 126 **MOTOR DESIGN FOR THE FASTEST COLD MILL**
The 5-stand cold mill at the Fairless plant will have a delivery speed of 7000 fpm. Successful commutation at high overloads has necessitated use of a 6-unit motor on the 5th stand. Circular rotor punchings are mounted directly on the shaft arms for maximum ventilation in minimum space.

PAGE 134 **IMPROVE MAGNESIUM'S CREEP RESISTANCE**
Aircraft applications demand alloys with high ratios of strength to weight and good strength at elevated temperatures. By adding 2 to 4 pct of rare earths to alloys of magnesium and zirconium, Dow Chemical has come up with new metals with outstanding high temperature properties.

PAGE 183 **STEEL PLANTS GNAW AT THEIR BACKLOGS**
Steelmakers are beginning to whittle away at their backlogs of orders. So far they haven't made large inroads. But they have reversed the trend; new orders aren't keeping pace with the high rate of production. Hence most producers find their backlogs are a little smaller than 6 months ago.

NEXT WEEK **DEVELOP NEW ELECTRO-MACHINING METHOD**
An electro-erosive method, combining electrolytic and electro-arcing effects, is being tested at Frankford Arsenal. It shows promise for the shaping and grinding of single-point carbide tools. A versatile electro-erosion machine is now being completed by a major machine tool manufacturer.

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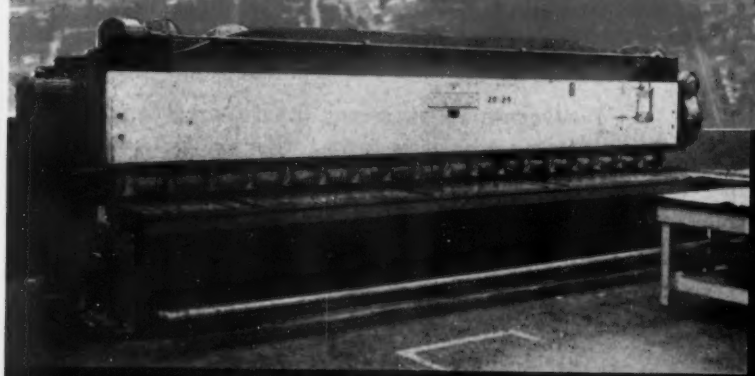
CINCINNATI Shears at CONVAIR

Photos: Courtesy Consolidated Vultee Aircraft Corp., Fort Worth, Tex



This $\frac{3}{16}$" x 18' Cincinnati All-Steel Shear, one of the Cincinnati units at Convair, has the length to cut full length standard sized sheets.

Cincinnati All-Steel Shears at Consolidated Vultee Corporation are shearing sheets straight and true in the important production of the world's largest bombers.

Illustration shows a $\frac{3}{16}$" by 18' Cincinnati Shear, one of the Cincinnati units at Convair. Aircraft production requires unusual length as well as unusual accuracy in shearing. Cincinnati furnishes shears to the aircraft industry in lengths up to and including 24' of length in $\frac{1}{4}$" thickness.

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the Iron Age
FOUNDED 1855

Freedom For What?

WE prate a lot about freedom. Every after dinner speech has a lot about it. Every political talk is full of it. Free enterprise comes in for its share of indefinite statements. All is a trifle vague. It doesn't reach far enough into Typical American Jones' consciousness.

When we get disgruntled about where we are heading we hear people apologize with, "Well, how would you like to live in Russia?" or "America is the place for me, Bud."

Then there's the fellow who pulls a long face, studies you a bit and comes out with "Well, if you don't like it here why don't you go back where you came from?"

Such answers don't prove anything. Some are too pat. Some are "smart" answers to evade the issue. They show lack of thinking plus lack of heartfelt concern for our country.

We might ask "Freedom for what?" Many people don't understand that we will never get anywhere comparing ourselves with other nations. It doesn't drive home a point to say that it takes 110 hours to buy a pair of shoes in Russia compared to 6 hours in this country.

Let's compare our own country with our own country. Where have we drifted in the past 20 years? What are our freedoms now compared to then? Where have they gone?

Does our freedom mean recklessly taking over a basic industry? Does it mean making a man join a union whether or not he wants to? Does it mean being pushed around with government controls by people who wave the flag in support of their "plans"?

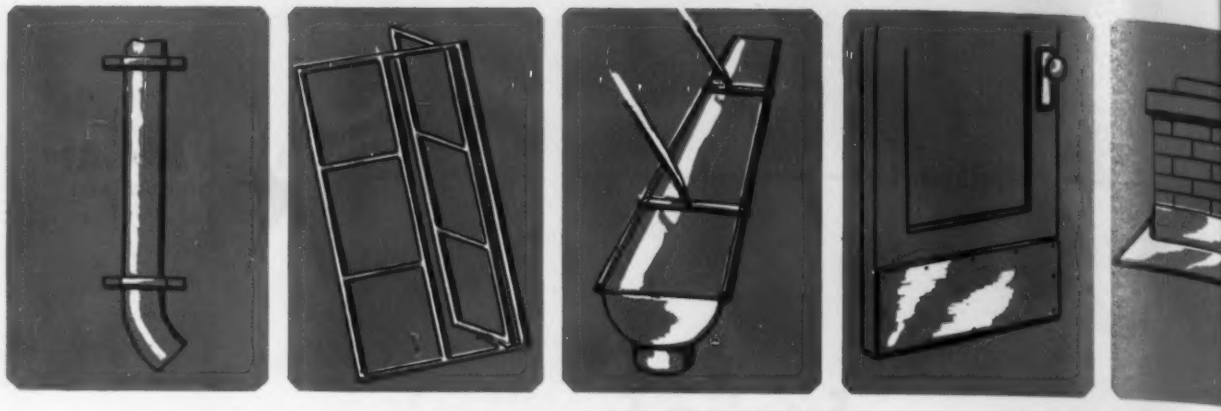
Have we freedom when unions with unlimited power become "big business"—far bigger than business ever was or could become under our checks and balances? Have we the freedom we prate about when government becomes "big business" and wants to tell us more and more what we should or should not do—under the guise of benevolence for the poor and downtrodden?

If that is what we call freedom then that is what we deserve—we also deserve the consequences.

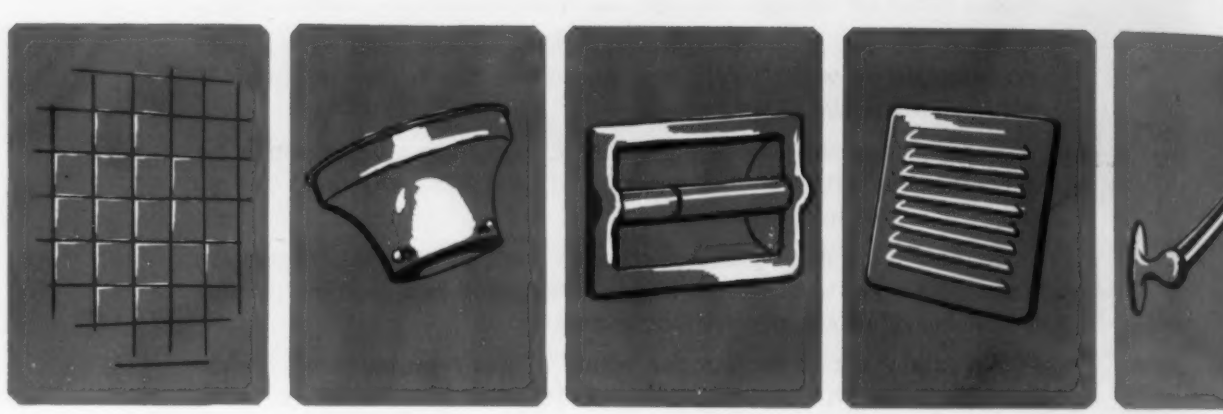
Tom Campbell

Editor

If you are a manufacturer of building materials



and are caught in the critical material squeeze



and are looking for a way out . . .

Many manufacturers of building materials find their production seriously threatened by NPA directives limiting or prohibiting production of their products from critical materials. Especially hard hit are manufacturers of building materials normally made of 18-8 stainless, brass, copper, aluminum, or chrome plated.

If your operations fall in any of these categories, then you will want to know more about Sharon '430' Stainless Steel. It is the best available material today for many such applications. Sharon '430' is a straight chromium grade of stainless with a record of successful application.

It is readily available with few restrictions as to end use. It may fit your production setup perfectly. If so, your critical material worries are ended.

Get the facts on this popular stainless today. Contact your nearest Sharon representative or write direct. Engineering data and technical assistance are available without obligation. A new booklet describing how to use Sharon '430' Stainless may be obtained by writing direct to ***Sharon Steel Corporation, Department 4552, Sharon, Pa.***

Those manufacturing gutters, downspouts, flashing, etc., will want a copy of the new information-packed booklet *Sharon '430' for Better Roof Drainage Systems*. Available from district sales offices or by writing direct.

your answer is *Sharon* 430 *stainless steel*

SHARONSTEEL

Dear Editor:

Letters from readers

Second-Hand Americans

Sir:

I am simply obeying an urge to tell you that I think your editorial "Are You A Second-Hand American?" in your Apr. 24 issue is the cleverest, subtlest and I hope sincerest page of writing that I have read in a long time.

What pleases me is the fact that it is universal; it is applicable in the United States, Canada, Great Britain, France, Brazil, India and China, and so on throughout every country represented in the world of today. The note of sincere honesty is probably so profound that it will be missed by millions but, anyway, thank you for it.

F. M. POOLE
Vancouver, B. C.

Aluminum Coating

Sir:

We note on the Newsfront page of your May 1 issue an item on the development of a successful production method for coating fabricated steel products and gray iron castings with aluminum.

We would appreciate further information on this item.

D. A. EVANS
Supervising Engineer
National Tube Div.
U. S. Steel Co.
Pittsburgh

For more information on this new production method write to the General Motors Research Laboratories, General Motors Corp., General Motors Bldg., Detroit 2, Mich.—Ed.

Powder in Welding

Sir:

Page 85 of your Apr. 24 issue carried a forecast item on iron powder being successfully used as backup material for welds on SAE 1015 and 1025 steels.

We would appreciate receiving a further description of this technique, if available.

A. J. ZWANZIG
American Electro Metal Corp.
Yonkers, N. Y.

A detailed article on this technique appeared in our May 8 issue, p. 116.—Ed.

Krupp Renn Process

Sir:

The following item appeared on p. 87 of your May 1. issue:

"At least one new company is seriously considering use of the Krupp Renn direct reduction process for reducing low grade ore from the Tennessee Valley. Ore runs anywhere from 25 to 45 pct Fe."

I would be most interested in knowing the name and address of the company or companies referred to in this item.

P. WRIGHT
Knoxville, Tenn.

We suggest you write to S. Williams, president, Green River Steel Co., Owensboro, Ky., for more information.—Ed.

Stud Welding

Sir:

In your Apr. 24 issue you have an article entitled "Stud Welding Cuts Fabrication Time." I believe we have an operation which may be improved by this process.

Can you please give me information as to the manufacturer of this equipment?

R. D. KNIGHT
Supervisor of Standards
Ohio Axle & Gear Div.
Timken-Detroit Axle Co.
Newark, Ohio

The manufacturer of the stud welding equipment is the Nelson Stud Welding Div. of N. P. Nelson Iron Works, Inc., 2727 E. 28th & Toledo Ave., Lorain, Ohio.—Ed.

Press Substitute

Sir:

We refer to the item on p. 87 of your May 1 issue stating that small stamping shops are interested in a new press-substitute a tenth the size of an equivalent conventional press.

Please advise who produces the above.

S. J. GWOOSH
President
Excel Automatic Products, Inc.
Newark, N. J.

Further information about the new press substitute may be obtained from Verson Allsteel Press Co., 9301 S. Kenwood Ave., Chicago 19, Ill.—Ed.

Clad Tubing

Sir:

Under the Technical Briefs section of your May 1 issue mention is made of a drawn, lead clad copper tubing made by Knapp Mills, Inc.

May I please have the address of Knapp Mills?

S. W. HILT
Sales Representative
Midvale Co.
San Francisco

The address of Knapp Mills, Inc., is 23-15 Borden Ave., Long Island City, N. Y.—Ed.

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GOODYEAR

THE GREATEST NAME IN RUBBER

Ortac—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

Fatigue Cracks

by Charles T. Post

Cobble

Any postage stamp collector will tell you that the post office department, in its eagerness to extract extra coin from the philatelists, issues s t a m p s commemorating everything from the American hen to motherhood.

But Assistant Editor Grant Carr, who dabbles in such things, points out that the steel industry has not graced a postage stamp design since 1912, long before stamp collecting became big business. In that year, the industry was relegated to the 25¢ parcel post stamp, used chiefly to send gifts to Aunt Minnie in Seattle at Christmas time.

It's a cinch that Truman, the way he feels now, isn't going to take a chance on having to put a steel industry stamp on any of *his* letters. Looks like we'll have to wait for a Republican president and hope for better luck than with Harding, Coolidge or Hoover.

In Business

We rather fancy the true tale of the engineer who loved his work so much that he bought a post-war surplus lathe after the war to play with in his basement. When his company's war contracts were cancelled, he also bought their surplus stock of control mechanism parts in order to give his after-hours work a little purpose.

Came the rearmament program, and the company was back in business on the component for which the mechanisms were used. But this time, when the company asked for bids on one of the parts, no subcontractors responded.

Our engineer friend spoke up, said he could make it in his basement. Now he's in business as a subcontractor, not only for his firm, but also for other companies making the same component.

Aptronyms

We see by the paper that Henrietta Hatch is executive secretary of the New Jersey Egg Council. Cackle! Cackle! And, from southern California, Ray Kay sends in the business card of Robert M. Frizzle, Frosted Food Lockers, Inc.

Honors

Your f.f.j. is proud of its brain children. Currently we are laying claim to at least a ray of reflected glory from Robert W. Huff, Jr., a consistent solver and contributor of Puzzlers. The frustration of the seasoned engineers who bat their heads against Huff's puzzlers would be doubled if they knew he was a 17-year-old high school senior.

The son of R. W. Huff of Republic Steel's Massillon metallurgical department, Robert is no ordinary high s c h o o l senior, though. Recently, he won a $100 first prize in a contest conducted by the American Chemical Society. Last year he won honorable mention in the same contest, and this year won honorable mention in the Westinghouse Talent Search. He serves as a high school chem lab assistant, and, like most famous Americans on the way up, has a newspaper route. In his spare time, he represents his school in public speaking competitions. The Puzzlers, of course, are strictly recreation, rated as a warmup in mental arithmetic.

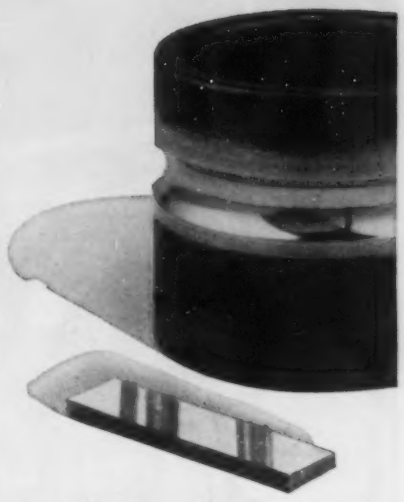
Puzzlers

E. M. Hoover's fly puzzle brought out the first team of Puzzler fans. Correct answers were received only from C. E. Norton, Chicago; L. D. Rice, Timken Roller Bearing Co.; C. E. Blass, Talon, Inc. and C. H. Goff, Barber-Colman Co.

The number problem is still pulling with answers from F. L. Barrows, Kelvinator; R. Smith, General Machinery Co. and H. R. Kapin, Los Angeles. F. J. Binckes, Binckes Engr. Co. has just come up with the solution to the ladder puzzle.

M. E. McKinney, International Harvester Co., submits this poetic puzzle. The King is faced with the problem of replacing his gardener. To screen out the undesirable applicants each must solve this riddle to be eligible for the position.

"The King's Gardener, an orchard must grow
Nine straight rows, 5 trees in each row.
If his Majesty you would please
This must you do with 19 trees."



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. . . in DYMO-C for carbides and DYMO for other hard materials.

From bearing races to precision hydraulic parts—from wear inserts to wire dies . . . wherever fine finish means better performance . . . you can be certain of the best with Elgin Diamond. Crushed, precision graded at Elgin and combined with an exclusive color identified vehicle in DYMO, it cuts faster and assures uniform predictable results.

Write today for complete information and remember, where they're particular about finish, they . . .

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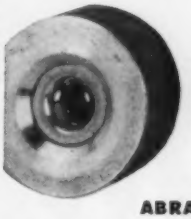
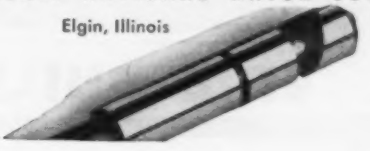


ELGIN DIAMOND

ABRASIVES DIVISION

ELGIN NATIONAL WATCH CO.

Elgin, Illinois



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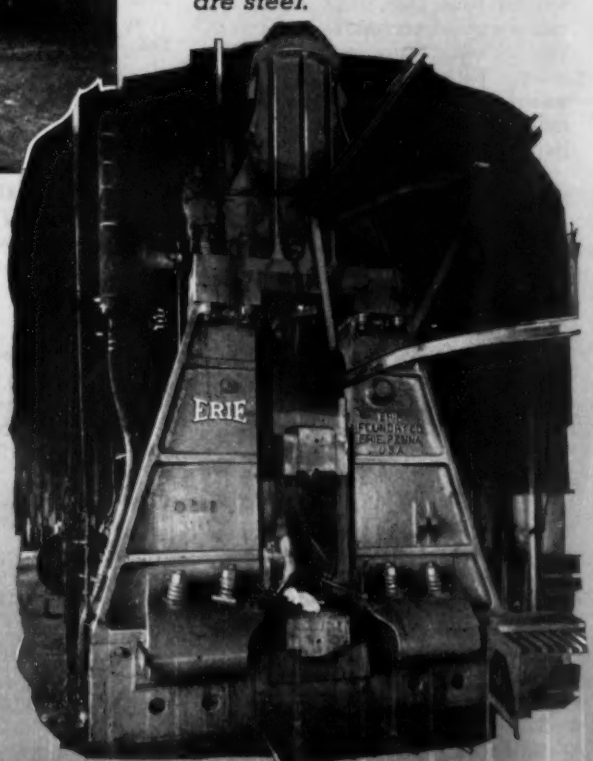
21 ERIE

STEAM HAMMERS HERE!

A large mid-western forge shop is making quality automotive forgings on 2 Erie Steam Hammers of 12,000 lb. rating, 10 Eries of 5,000 lb. rating and 9 Eries of 15,000 lb. rating. Why? Mainly because Erie Hammers are the choice of experienced Hammergangs and of the management men who pay the bills. Rugged Dependability is the answer—Erie Hammers produce profitably!

On Erie Hammers all stressed parts, frame, anvil, upper works are steel.



9 - 15,000 lb.

2 - 12,000 lb.

10 - 5,000 lb.

ERIE

Write for Bulletins Describing in Detail Erie Steam Drop, Board Drop, Single and Double Frame Forging Hammers, Pneumatic Hammers and Trimming Presses.

ERIE FOUNDRY COMPANY

Erie, Pa., U.S.A.

ERIE BUILDS *Dependable* HAMMERS

the iron Age
FOUNDED 1855

THE IRON AGE Newsfront

► Sharp cuts in Washington staffs of DPA and NPA are in prospect for June 1. Although it represents a cutback, the emphasis is on decentralization, giving field offices more responsibility in their local areas.

Field offices will also be cut as decontrol spreads. But the steel scrap section is not likely to be cut because another shortage is in sight for next winter and scrap mobilization committees will probably be reactivated.

► While carbon steel may be decontrolled by the fourth quarter it's a safe bet that nickel-bearing stainless and other high alloy steels will have to remain under controls a lot longer.

► Natural gas is still a touch and go proposition for industry in many sections of the country, despite great increases in lines and storage facilities. This is one reason LP gas (propane or butane) is being more widely used. Another is fluctuations caused by varying the proportions of natural gas and manufactured gases. To hold process control, a number of companies have switched to full-time use of LP gas.

► Remember the plans that were supposedly drawn up long ago for M-day? Well, meetings are now being scheduled in Washington to draw up plans for M-day.

► Self-lubricating metal powder bushings developed for roller chain applications will soon be announced. These oil impregnated bushings replace former steel connectors and have extremely high fatigue properties--close to those of carbon steel.

► Over-square engines (where the bore is larger than the stroke) have been introduced in several British cars. Piston speed is reduced by 25 pct, lengthening the life of moving parts. This also permits larger valves; the manufacturers report less fuel consumption.

► Aluminum appears destined to follow chrome stainless steel off allocation. Stocks are getting better and aluminum salesmen are urging their customers to buy. But it's the old story--those who have CMP tickets don't need any more and those who want to buy are having trouble getting the tickets.

► Rotary lawnmowers are making big market gains, particularly in the South and in California where they are already outselling the standard designs.

► The Navy has developed a plastic patch for pipes that can be applied in 7 min and will withstand working pressure 20 min later. Patching material consists of fibrous glass cloth, resin and activator, and fibrous glass tape. No surface preparation--other than wiping dry--is needed.

The patch will work over jagged ruptures or sunflower bursts, will even join two ends of completely severed pipe. Except for high temperatures, the patch is not affected by gases or liquids in shipboard lines.

► New Egyptian steelworks (at Aswan and Cairo) expect to get into production in 1956 with 125,000 net tons annual finished steel capacity. . . . New welded tubing mill (up to 3-in. diam) of Tata in India will have capacity approaching 90,000 tons per annum, greatly above expected demand.

NEWSFRONT — NEWSFRONT — NEWSFRONT
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DOW CORNING SILICONES

give motors more muscles

(Photo courtesy National Electric Coil Co.)

On the hoist motor outlined above Class B Insulation failed 18 times in less than 8 years. Rewound with Class H Insulation made with Dow Corning silicones, the motor is still in excellent operating condition after 4 years of uninterrupted service.

LOOK AT THE RECORD

DATE AND CAUSE OF FAILURE

2/21/40 Armature coils grounded	7/28/45 Armature coils grounded
12/29/40 Armature coils grounded	9/14/46 Armature coils grounded
9/2/41 Open armature circuit	2/6/47 Armature coils grounded
4/13/42 Armature coils grounded	6/23/47 Armature coils grounded
4/18/42 Leads loose in commutator	9/17/47 Armature coils grounded
10/24/42 Armature band thrown	11/4/47 Armature band thrown
4/5/43 Armature coils grounded	12/26/47 Armature coils grounded
8/9/43 Open armature circuit	1/7/48 Rewound with Class H
10/7/43 Armature coils grounded	1949 No failure
9/30/44 Armature coils grounded	1950 No failure
10/18/44 Armature coils grounded	1951 No failure

CLEARING away the "overburden" in strip mining calls for moving a lot of dirt and digging into solid rock. Excessive overloads limited the service life of this main hoist motor to 5 months. Rewound with Dow Corning Silicone (Class H) insulation, the motor has already outlived its previous service record almost 10 times; has prevented at least 9 costly breakdowns at an estimated down-time rate of $1000 per hour.

That kind of performance has been repeated in thousands of different installations. That's why more and more production men in varied industries are insisting upon Class H insulation for their hard working motors. These may be critically important motors; motors subject to frequent overloads; motors operating in high ambient temperatures or exposed to a combination of heat and damp or corrosive atmospheres.

Users of Dow Corning Silicone (Class H) insulation are finding that it pays for itself over and over again. In fact, life expectancy of Class H insulation made with Dow Corning silicones is in the range of 4 to 100 times the life of Class B insulated equipment under comparable operating conditions. And Class H costs little more than the second best class of insulation.

For complete information on Class H Insulation, list of rewind shops or sources of supply, call our nearest branch office or write Dept. O-17.

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TRADING: Russian Buyers Slip Underground

American stand against trading on strategic goods slows deliveries . . . But Reds fight back in world marketplaces . . . How Russia gets the goods . . . Ports that are chinks in U. S. armor.

The Russian Iron Curtain is outfitted with convenient trapdoors to permit a constant influx of Free World goods and materials. The hoard of gold and foreign hard money in the Russian till talks in many languages. And the ears of many international traders are attentively turned in that direction.

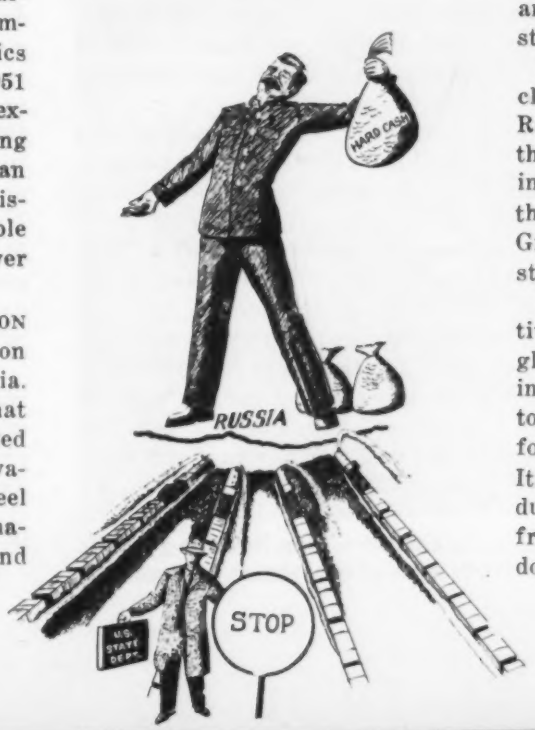
Much of this trading is aboveboard, involving "peaceful" items. But by ruse and subterfuge Russia is exercising its determination to get at least some of the strategic products it needs and must have. Foreign merchants reason that the world is big and Mr. Truman's far away. The threat of American withdrawal of credits and assistance if trading security is violated in many cases has been ignored overseas.

Happy Statistics—Although shipments of strategic items made in America leaking into Russia are now considered insignificant, the Reds are able to buy in other market places. The U. S. Dept. of Commerce recently published statistics purporting to show that in 1951 Russia's slice of total western exports was a mere 1.4 pct, sliding from 6.4 pct in 1938. European traders scoff at these happy statistics, claiming that it is impossible to measure Russia's undercover trade.

The State Dept. told THE IRON AGE it has only indirect bans on shipping stategic goods to Russia. Free nations must guarantee that U. S. goods will not be re-exported to the Reds. But there are evasions. For instance, American steel may be used by a Free World nation in building transformers and heavy electrical equipment which are shipped to Russia. This is done through the connivance of individual European companies.

Many Europeans smirk at what they term America's naive idea that trading with Russia can be reduced to non-essentials. In the cold war today, Russia is getting steel, machinery, furnaces, rubber, hardware products, metals of many kinds. This trade is either unashamedly in the open or partly disguised. Admittedly the Reds are not able to get all the vital equipment and goods they need but their appetite is considerably satiated.

Spanish Gold—Money overcomes trading scruples and Russia has fortified its treasury with gold. Few remember that in 1937 a Franco-threatened Spanish Liberal Government shipped 607 tons of gold to Stalin to hold "in trust." Ruler Franco did not get his hands on it nor will he ever be able to. American dollars are going to Russia in non-strategic trade. This gives the Reds more hard money to promote undercover deals.



Since 1950 Russia has been bolstering its cash resources at many international ports. This expedites prompt payment. Also, embarrassing questions are not asked on the origin of materials being received.

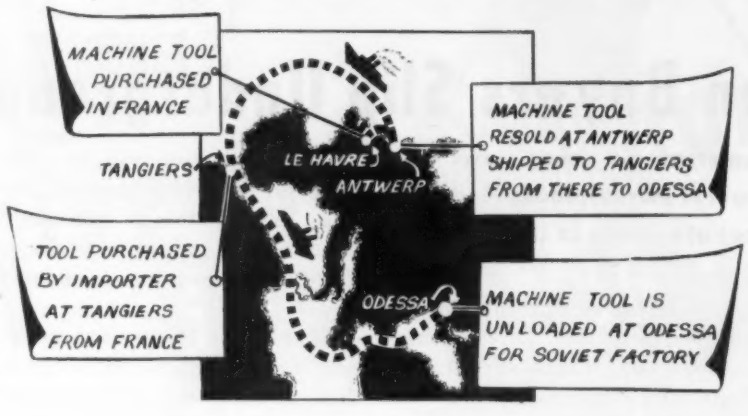
American pressure which has probably slowed considerably deliveries of strategic items to Russia has also forced them off the conventional European routes to the Iron Curtain. Some European traders insist that Russia can buy any strategic item it needs and which is available for export. Far-flung ports of the Reds have welcomed deliveries of an assortment of products. Shortages are easing in Europe and Russia's opportunities to buy are improving.

Incognito — European Russia buys little in its own name. But its satellites buy much. For instance, the Russian-controlled Czechs purchase western products through an organization called OMNIPOL, stationed at Zürich, Switzerland.

Raw materials and finished machinery and goods dribble into Russia through international ports that reship to Russian ports. The international port of Tangier on the North African Coast opposite Gibraltar is a notorious stepping stone to Russia and cohorts.

Exotic Tangier has the primitive flavor of an Arabian town glossed over a high-pressure trading organization. Tangier is said to export 35 times what it imports for use. Trading is its claim to life. It has no restrictions, no taxes, no duties, no currency of its own. A franc changes hands as easily as a dollar. Some 70 bankers and 250

How Machine Tools Can Reach Russia


MACHINE TOOL PURCHASED IN FRANCE
TANGIERS
LE HAVRE
ANTWERP
MACHINE TOOL RESOLD AT ANTWERP SHIPPED TO TANGIERS FROM THERE TO ODESSA
TOOL PURCHASED BY IMPORTER AT TANGIERS FROM FRANCE
ODESSA
MACHINE TOOL IS UNLOADED AT ODESSA FOR SOVIET FACTORY

trading firms have clustered there.

It is reported that recently Russia was able to buy through the Tangier route rifle boring and gun honing machines. Traders say they leaked out of France, a country fighting shortages to equip its defense plants. Other machine tools slip in and out of Tangier.

Devious Route—Here is how a strategic machine tool can fall into the wrong hands. A Tangier-stationed importer for a non-industrial North African country arranges to purchase a machine tool from a western Europe country. The European producer is not forbidden to sell to the North African. The tool may be shipped to Antwerp, Belgium, and while at that port the African may suddenly "discover" that his country has no factories and thus no need for machine tools.

He sells to a Russian-affiliated trader who ships the tool to Tangier and from there to Odessa on the Black Sea. A Russian weapons factory may be the eventual recipient.

Tangier is not the only loophole into Russia. There are other international ports trafficking with the Reds. Shipments to European Russia enter mainly through Odessa or through the Far East Red ports of Port Arthur, Vladivostok, Dairen. Trade to these distant ports has been on the upsurge.

The Portuguese port of Macao, deeded by a former Chinese government to Portugal for aid in warring against pirates, is richer today than ever before. While Hongkong curtails imports till the end of war between China and the United Nations, its neighboring port to the South bleeds it of more and more business.

Buddies—Portugal is a member of the North Atlantic Treaty Organization and the U. N. But its trading relations with Red China are amicable. Portugal fears that if they were not it would soon be unseated in Macao. Thus Macao is a pipeline to Mao-Tse-Tung and Moscow.

Working hand in glove with Macao is the Portuguese colony at Mozambique, South Africa. A recent report reveals that a shipment of American straight chrome stainless steel journeyed to Mozambique and was transshipped to Macao. This is standard operating procedure.

As a heavier buyer and a more moderate seller, Russia must have transportation to get and deliver the goods. Transportation problems are solved by a fleet of merchant ships at its disposal. In the summer of 1951 seven ships of Panamanian registry were transferred to the Czech flag. Poland is supplying 17 ships to Russian trade. Other available vessels are furnished by Panama, Costa Rica, Denmark, and Russia itself.

Vampire—The Russian parasite is also at the throat of manufacturing industries in zones or nations it controls outrightly or dominates. An example is USIA (Administration of Soviet Assets in Austria) which is a Soviet-run combine of 350 plants and facilities. This group was claimed and seized by Russia after the Potsdam Conference in 1945 and Austrian attempts to wrest control from the usurpers have been thwarted.

USIA buys what it needs through INTRAC, the principal Soviet export-import agency which operates at Vienna and is the trading funnel to Moscow. The industrial combine has bought diamond dies from England, testing machines in Switzerland, cables from the U. S. And recently INTRAC bought electric furnaces for a Red steel plant. These last were shipped to Trieste and popped up unobtrusively probably at Odessa.

Dozens of other export-import possibilities exist. They are as devious and complex as nimble-brained traders can make them. One sturdy bough on the Russian purchasing tree is the "Togliatti Trust" in northern Italy reportedly producing for export to Russia. (Togliatti is the Red boss in Italy.)

Working for Reds—About 175 plants in northern Italy have reportedly made their peace with the Reds. They are principally metal producers, metalworkers, and machinery builders. Russia deals with them legally through its trade delegation. Reward for cooperation is labor peace and the right to produce unhindered. The Italian Communist party is suspected of getting a fat commission from these dealings. On the other hand the Italian government, jealous of its right to U. S. aid, tries to confine exports to non-military items.

The crest of the U. S. importing wave has flattened. When the U. S. was scouring shortage-struck ports for raw materials in 1950, Russia was kept at bay. But now U. S. imports are retreating and Russia is taking up the slack.

Russia is buying cobalt; what

titanium there is available; machine tools, such as boring mills, drilling tools, shapers, honing machines; metal treating or producing furnaces; rails (heavily); cold-rolled strip; tinplate; black sheets 20-gage and thinner; plates for shipbuilding; cast iron and hardware items; rubber; and assorted "peaceful" materials.

Russia Sells—The Reds seem to have lost interest in lead, zinc and in alloy steels. Some stainless is still arriving from England. Russia is no longer avidly seeking imports of ball and roller bearings. This trade petered out last year when it was reported that an expanded Czech plant could meet all needs and have a little left for export. Red demand for rolling mill equipment appears to have been deflated.

Russia is shouldering its way into the sellers' market, now selling about 50 to 55 pct of the value it imports. Value of exports in 1951 was about 35 pct of imports. For the past 6 months Russia has been noticeably increasing exports of harmless finished steel products. Bolts, nuts, rivets, wire have been traveling the seas to South America and Africa.

Russia has been exporting negligible amounts of nickel. Chrome and manganese ores are sold to France, Belgium, Luxembourg, Germany, England. April sales of these ores exceeded 100,000 tons. Chinese tungsten is being sold through Macao and Tangier and part of this is filtering into the U. S.

Driven to Reds — The international traders do not feel that American disfavor is a sword of Damocles over their heads. It is too easy to dodge. And even if they are blacklisted for indiscreet trade with the Reds, they do not promptly close up shop. Instead they are driven whole hog into the Russian bailiwick.

Right now Russia is making hopeful sounds of increasing imports. It has tried to do so officially. The American State Dept. viewpoint is that this is a maneuver to split the Atlantic Pact nations. This is correct.

REFINING: New Contender in Metals

Chemical Construction Corp. claims new method of chemical refining of metals will cut costs . . . Commercial use will start this summer at new cobalt plant . . . Nickel refinery for 1953.

Conventional smelting and refining techniques saw the emergence of a radically new chemical method of treating ore concentrates to produce pure metals. Its developer, Chemical Construction Corp., subsidiary of American Cyanamid Co., claims the new chemical refining process will reduce current metal production costs drastically.

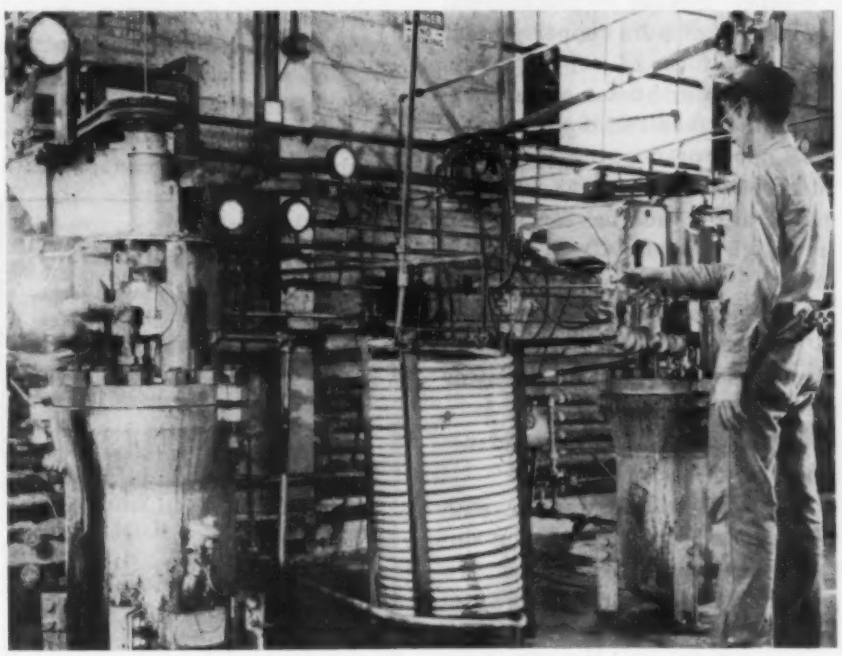
At present manganese, aluminum and magnesium are among metals on which the CCC process cannot be used. But it is expected that methods of handling these metals will be worked out in the near future.

Commercial Use Started — The CCC process is no longer in the test stage. First commercial use will begin this summer with the completion of a $2.5 million cobalt refinery for Howe Sound Mining Co., Salt Lake City. Annual output of the new plant is expected to be 2000 tons which will boost world cobalt production by slightly more than 40 pct.

Another refinery is under construction at the National Lead Co.'s mine, Frederickstown, Md. Costing $5 million, the plant is scheduled to begin output in mid-1953. Yearly production is expected to be 700 tons of cobalt, 900 tons of nickel, 700 tons of copper and 7500 tons of fertilizer grade ammonium sulfate.

A $17 million nickel refinery is also being built for Sheritt Gordon Mines Ltd., Edmonton, Alberta. Scheduled to begin production in the fall of 1953, this plant will turn out 8500 tons of nickel, 1000 tons of copper, 150 tons of cobalt and 70,000 tons of ammonium sulfate yearly.

Powder Form — Refiners using the new process prepare an ore concentrate by conventional flota-



REFINING: Heart of the CCC process is autoclaves where, under high temperatures and pressure with reducing agents, the copper is precipitated from solution.

tion methods. The concentrate is then introduced as a slurry into an autoclave along with water and an acid or ammonia. From the resulting leach solution individual metals are recovered in powder form by the use of suitable reducing agents.

By varying conditions during the treatment, different metals in the ore are produced separately as pure powders which may be pressed into forms ready to market or in the case of copper, extruded as rods or pipe.

No Price Drop — Lower metal prices are not anticipated as an immediate effect of the chemical refining process. Demand is expected to keep prices just about where they are until supply catches up.

Cost of scrapping existing facilities to employ the chemical method is expected to be made up within 3 years from operating savings. Material requirements are so moderate in quantity and cost that in many cases it will be possible to build commercial plants at the site of the mine. Drastic cuts in transportation costs will result and time lag between mining and pure metal will drop from months to a matter of hours, it is claimed.

Copper Powder — Commercial production of pure copper powder from any form of copper scrap, brass scrap or blister copper may be another result of the new process. Copper produced by this method is better than 99.9 pct pure and meets all standards for oxygen free, high conductivity electrolytic copper.

The Chemetals Corp. collaborated in perfecting the process, and Sheritt Gordon Mines Ltd. owns many rights to the method as a result of its participation in developing chemical refining.

Chemetals is also working with CCC on a method of producing sintered manganese oxide from low grade manganese ores. Work began last September and extensive piloting of the process is scheduled for the very near future.

WAREHOUSES: Emphasis on Selling

Hold 43rd convention of Warehouse Assn. in New York . . . Warehousemen admit good year . . . Fear uncertainties of steel-labor trouble . . . Selling is a must—*By Tom Campbell*

When one warehouseman meets another—the way it could have happened last week at the annual meeting of the American Steel Warehouse Assn. in New York—he's apt to say cautiously that "business isn't as good as it should be." But it's a different story when he's talking to his wife or an intimate friend.

Then he's likely to wax a little more enthusiastic and admit that "business has been pretty good. The past month has been kind to him and maybe the coming months will be kinder. Orders have come in without much effort but now he might have to get out and sell."

What is keeping warehouse people on tenterhooks is the uncertainty of the steel-labor dispute. Natural questions are: Will there be a strike? How long will it last? What will the price increase be?

Strike Thoughts—Many at the convention last week were guessing that sooner or later the union will pull a strike of from 2 to 4 weeks. They also thought that the price of steel would rise $5 to $6 a ton. Those who are more confident of a price rise are taking as much steel as they can get with what allocation tickets they have.

Some steel items are hard to get and this spells mostly hot and cold-rolled bars, carbon and alloy. Availability of other products is better but nevertheless inventories are badly out of balance. Demand for most warehouse items has been solid. But now warehousemen note warily that large steel suppliers are condescending to furnish small lots of steel. This was the exclusive province of the warehouses during the shortage.

In early issues, "Iron Age Salutes" carried an article naming Harold Ressler as new president of the American Steel Warehouse Assn. Walter S. Doxsey was reelected president. This was corrected in later issues. Mr. Ressler was named chairman of the executive committee.

Warehousemen realize that a freer steel supply means sharpening up salesmanship that has lately been largely ignored. They will need better salesmen, must retrain the salesmen they have on hand.

Controls—Association president Walter S. Doxsey who spoke at the 43rd annual meeting told assembled warehousemen that 1951 was a good year despite badgering of Washington controls. "You sold more steel than ever before, 8.4 pct more than in 1950 and 27 pct more than in 1948," he said.

Mr. Doxsey wasn't all optimism. He said that although steel warehouse stocks have been gaining for the past 6 months, they are still 40 pct below normal and unbalanced. He pointed to the big job today: balancing inventories and getting ready to sell.

C. M. White, president of Republic Steel Corp., said that the government is "the dominant partner in all business enterprises like ours." He pointed out that industry had to seek government approval of many of its moves.

ASWA Elects Officers

Reelected president and secretary of American Steel Warehouse Assn. is Walter S. Doxsey, Cleveland. Harold B. Ressler, Joseph T. Ryerson & Son, Inc., was elected chairman of the organization's Executive Committee. Other officers chosen were: J. J. Hill, III, Hill-Chase & Co., Inc., Philadelphia, and Leland W. Browne, Gate City Steel Works, Inc., Omaha, vice-presidents; and F. H. Lovejoy, Wheelock, Lovejoy & Co., Inc., Cambridge, treasurer.

STEEL: Court Wait Cancels Bargaining

While Supreme Court decides on seizure, collective bargaining forgotten . . . No early action seen from Court . . . Union pledges strike if Truman seizure is ruled out—*By J. B. Delaney.*

Until the U. S. Supreme Court rules on constitutionality of President Truman's seizure of the steel industry nothing is likely to be done toward settlement of the wage-price dispute through collective bargaining.

At least nothing will happen until it is determined whether or not the Court will rule before taking its summer recess, now scheduled to begin June 2. If the case is held over until the fall term there would be a period of at least three months during which the steel producers and the United Steelworkers of America (CIO) could get together.

The fact that the court battle over seizure has reached the nation's highest tribunal greatly lessens chances of a bargaining table settlement in the near future.

What Powers—The question before the Court—whether the President has inherent power to seize an industry in what he classifies an emergency—is important to industry generally and the steel industry in particular. A settlement of the wage-price dispute would make the question "moot," and the Court might drop the case.

Few observers look for the Court to act before June, at the earliest. In view of the importance of the case the court might delay its summer recess, if necessary, in order to hand down a decision. Not overlooked, though, is the possibility of a delay until the fall term.

Meanwhile, there are no known plans for a resumption of collective bargaining.

Actually, were it not for several of the so-called "fringe" issues, the union and the industry might be able to compromise their differences. These fringes include the union shop and 1¼ time for Sunday work, as such. Also objectionable from an industry standpoint is the escalation clause recommended by the Wage Stabilization Board. This is the provision that wages rise automatically 2½¢ an hr. July 1, 1952, and another 2½¢ Jan. 1, 1953.

Attorney John W. Davis for steel: ". . . a usurpation of power."

In return for union surrender on these points, particularly the union shop, the industry probably would be willing to increase its hourly wage offer of 12½¢. It would mean that the total "package" offered by the industry, including other fringe concessions, would approach 25¢ an hr.

Also, the industry apparently has got nowhere on prices. The Administration is sticking to its position that the only concession price-wise will be the approximate $3 per ton the industry has coming to it under the Capehart Amendment which covers only cost increases from the start of the Korean conflict to last July 26.

Philip B. Perlman for the government: ". . . to protect the nation."

On the basis of his remarks before the USW's sixth biennial convention in Philadelphia last week, Philip Murray, union president, is in no mood for compromise. His constant reiteration of insistence on the full WSB recommendation, including the union shop, makes it difficult for him to back down on this later.

The convention's adoption of a resolution that the workers will not long continue on the job without a contract virtually assures an immediate strike should the Supreme Court return the mills to the industry. While the government is in control, there will be no general walkout. But there will be slowdowns and perhaps scattered wildcat strikes.

Union Shop? — If the Court favors the seizure action, Secretary of Commerce Charles Sawyer probably will impose the WSB package, or something very close to it, on the industry. It is questionable whether this would include the union shop.

Murray's use of the convention as a sounding board for the union's case was a masterpiece. Administration leaders, including Vice-President Alben Barkley and Secretary of Labor Maurice Tobin, went down the line for the union. Their speeches left no question that the government is 100 pct behind the USW.

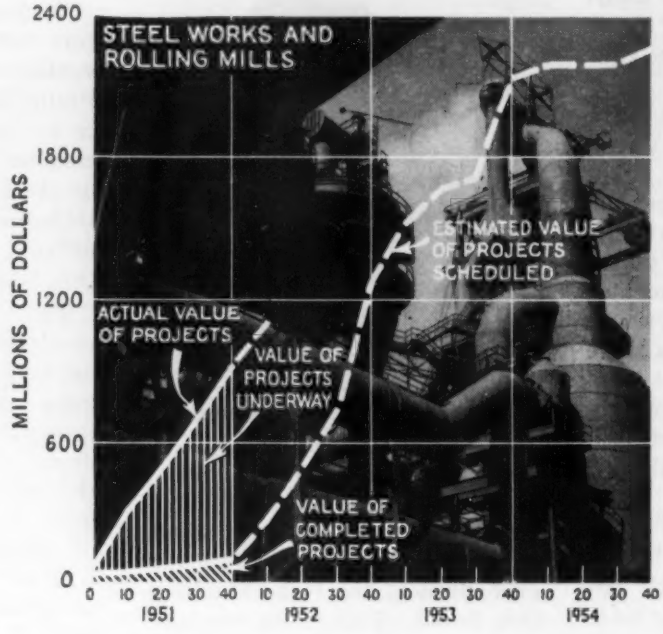
Insurance Plans Okayed by SSB

Employers' plans for providing disability, hospital and surgical expense, and group life insurance for workers can be instituted or continued without specific approval, Salary Stabilization Board has ruled, if they cover only those subject to SSB jurisdiction.

STEEL: Upswing in Midwest Capacity

Expansion plans being carried out despite increased taxes and labor problems . . . Boost in tubing supply indicated . . . Little hope for increased bar production—*By K. M. Bennett.*

At Chicago recently, Youngstown Sheet & Tube fired up the first of four new openhearths that will boost steelmaking capacity at that mill 605,000 annual tons. All four should be in action by the end of the second quarter. By the end of the fourth quarter, another four new furnaces will add another 605,000 tons to the mill's annual steel output.



With Youngstown leading, midwest steel men are continuing with expansion plans despite a rising tax load and a muddy labor picture. A few blueprints have been scrapped, and a few proposed steel expansion plans have died aborning on board meeting tables. But midwestern steel will achieve a sturdy increase in productive capacity during '52.

Backing Youngstown's eight furnaces, and scheduled for '53, are a new blooming mill (possibly second quarter of '53) and a new sheet mill (set tentatively for operation in the second half of '53).

Seamless Mill—Republic's South Chicago Works has in the building a $26 million seamless tube mill with a 180,000 annual ton capacity. The mill will handle 2⅜ to 8⅝ in. tube.

Inland, at Indiana Harbor on Lake Michigan's southern tip, will bring in four openhearths with an annual capacity of 750,000 tons in the third quarter. One blooming mill will be expanded.

National Tube, at its Gary Works, should have in operation this summer a high alloy seamless tube mill with a capacity of 3000 tons per month. The Gary Works of U. S. Steel will have completed rehabilitation of their 36-in. slab mill sometime in the third quarter. It is expected that the reworked mill will climb in produced tonage potential from 960,000 to 1,250,000 tons.

Granite City Expansion—Granite City Steel, Granite City, Ill., has embarked on a $40 million expansion program that will increase ingot capacity from 750,000 annual tons to an estimated 1,250,000 tons yearly by 1953. Scheduled for operation in December of this year is a new 46-in. blooming mill, for March of '53 a 4-high reversing mill in the present strip mill, and addition of three new 300-ton openhearths in March, April, and May of '53. Granite City acquired two blast furnaces of 600 tons and 500 tons capacity.

Ingersoll Products Div. of Borg-Warner will have in the early fourth quarter two electric melting furnaces with an output of about 6000 tons per month. A sister organization, Ingersoll Steel Co., at Newcastle, Ind., will boost its production of alloy steels by about 40,000 to 50,000 tons per year with the addition of two electric melting furnaces.

One of the Midwest's oldest strip producers (incorporated Jan. 2, 1885), Acme Steel, will move a portion of its facilities nearer the Canadian markets with a strip mill planned for the Toronto area in late third quarter.

Keystone Steel & Wire plans to bring into production in October of this year an expanded blooming mill capacity that will push billet output from 335,000 tons per year to 360,000 tons. The new ingot processing mill is a three stand, continuous model.

No Plans for Eastern Mill Site

National Steel Corp. has no immediate plans for building its proposed eastern mill. It may never do so. Nevertheless the company is still holding onto the property it assembled near Paulsboro, N. J., for this purpose. And other eastern producers must bear this in mind as a future competitive possibility.

Whether National eventually builds the mill probably will depend on competitive factors in the future. Just now the company is content to concentrate its expansion and improvement plans on existing mills. By mid-1953 its ingot capacity will be about 6 million tons, an increase of 900,000 tons over capacity at last Dec. 31.

National also owns a tract of land suitable for a steel mill in Indiana, but this, too, is merely "insurance" for possible future requirements.

ALUMINUM: Reynolds "Opens" Plant

Opening of second plant will bring capacity of new South Texas plant up to 80,000 tons . . . Corpus Christi citizens turn out . . . Will attract new business—*By R. L. Hatschek.*

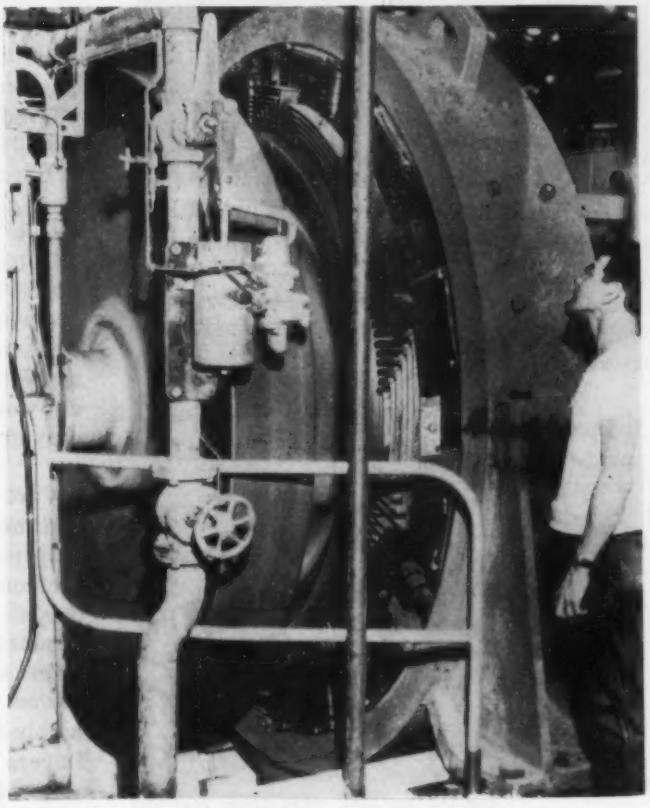
Official dedication of Reynolds Metals Co.'s new aluminum plant was held last week. It celebrated opening of the first potline of the new San Patricio plant, Texas, which gave operating aluminum capacity in the U. S. a 40,000-ton upward shove. The plant began production last month and Reynolds now has near completion a second, equally huge potline, which will soon bring the South Texas plant up to full capacity of 80,000 tons.

HAPPY SMILES: U. S. procurement boss Jess Larson (right) and company president Richard S. Reynolds, Jr., present happy countenances as they stand before the first batch of aluminum pig to come from the new San Patricio Plant.

The citizens of Corpus Christi and vicinity turned out in large numbers to see this new addition to local industry. Main speaker at the ceremony was Jess Larson, head of both General Services Administration and Defense Materials Procurement Agency.

Attract Business—Mr. Larson said it was a team of big business and government which brought about the opening of this $80 million privately financed plant. He also assured listeners that such a plant would be certain to attract much new small business to the district — fabricators and consumers.

Company president R. S. Reynolds, Jr., stated that additional facilities for further processing aluminum were expected to be built. This includes rolling and extrusion mills as definite possibilities. A $42 million alumina plant is already under construction adjacent to the reduction plant's site. Approximately 1000 tons of alumina a day will be produced from Jamaican and Haitian bauxite (See THE IRON AGE, Apr. 10, 1952, p. 73).



POWER: Generator producing 2500 kw of DC current for reduction of aluminum at Reynolds' new South Texas works.

Fully Integrated — When the alumina plant is finished, the whole works will be one huge fully integrated unit with raw bauxite coming in one end and ingots and pigs leaving the other. Conveyer belts will be used extensively in handling raw materials. Addition of fabricating facilities will then provide even greater integration.

The heart of the natural gas powered plant is housed in the four potrooms. There are four potrooms but actually only two potlines. Electrical current flows up one bank of pots and down the other, in effect folding the potline to shorten the required amount of bus bar and reduce some of the transmission losses. Huge quantities of aluminum—nearly 10,000 tons—are used for bus bar and 440 tons of copper bus bars are used where compactness is essential. Another feature is the size of the pots themselves — they are the largest in the world, claim Reynolds Metals' officials.

"Best There Is"—The company is also convinced that its engineers have come up with the most efficient design in the world.

Probably the most striking thing about Reynolds' new plant is the "aluminum look" about it. The light metal is used extensively for roofing and other construction applications—besides its use as an electrical conductor.

REG. W: No Buying Jam in Showrooms

End of Reg. W lures buyer into market . . . But he's cautious . . . Buying's not spirited . . . Banks keep gates closed on easy credit . . . Sales increase seen gradual—*By T. Metaxas.*

The timid buyer edged his head a fraction of the way out of his fortress of sales resistance last week with suspension of Reg. W restrictions on installment buying. In metropolitan New York, mecca of appliance and auto sales, hundreds of retailers of washing machines, refrigerators, television, freezers, and automobiles, new and used, formed a unanimous delegation to greet him.

But he let most of the retailers, front line men for manufacturing industry, know that he would not be shoved headlong into anything. His buying spirit was cautious. Sales in most cases showed at least a wriggle of new life and it was indicated that in the long run easier credit would contribute to increased business. This rise may not be as sheer as retailers would like it to be.

Banks Cautious — Stores that had slapped freshly-painted signs of "No Down Payment—24 to 36 Months to Pay" on their windows saw their ardently-sought buying spree menaced from another flank. The spirit of Reg. W died stubbornly with most of New York City's banks. They showed no early inclination to go crazy lending money. More or less, the restrictions of Reg. W still stood.

Of the many appliance chains interviewed only one sang an optimistic tune. This was Davega Stores Corp. which claimed "considerable improvement" in sales of appliances and video. Other major appliance outlets were cautious, finding no evidence of a genuine buying splurge. Most added a codicil to non-enthusiastic statements of only a slight pickup in business: The buyer needed time to think things over and would slip into the market gradually.

While retail stores and auto dealers were clamoring for sales, banks indicated that a little more credit leniency may be forthcoming. It would be strictly sensible.

Sales Results — Macy's department store reported sales at the same rate. The store would not partake too avidly in longer installment terms. Sears, Roebuck, at Brooklyn, observed that sales on appliances had crept ahead a little. Sears was preparing advertising to lure out more installment buying.

Another large appliance chain had sponsored a series of dramatic radio ads to herald the return to easy credit. But it sadly noted that no appreciable difference had been detected, nor was it seen developing.

Banks processing installment contracts indicated a slight upsurge in volume, but conservatively added this was nothing phenomenal. One bank claimed no difference.

Some appliance and auto dealers gritted their teeth at the credit claims contained in some of their competitors' advertising. They termed them sheer fiction as long as lending institutions stood stubbornly conservative. Intent of some retailers was to accept as many installment applications as possible and hope that some would crash the lending barrier. In any event, rejected customers might be talked into a bigger down payment, a shorter loan.

"I cracked up, Doc, when some practical joker told me a line of customers had formed outside my store."

Sales Talks—Some firms reporting a sales advance said new customers could be induced to purchase higher-cost appliances. Sales psychology here was that the extra $50 or so for a better product would seem insignificant when paid off over the stretched-out period.

Dealers in new automobiles gassed up their cars to speed them out of showrooms. But of several dealers queried only two would claim much-improved sales. One auto dealer said sourly that easier credit had no effect at all. Most auto dealers claimed slightly improved business with much more kept in the deep freeze by an unkindly credit attitude on the part of banks.

At least one bank was known to have dropped its guard to permit payments over 36 months. Others offered terms of one-third down and 24 months to pay.

Used car dealers seemed to expect glorious things from suspension of Reg. W. But the banks were still calling the tune and this provoked bitterness from some dealers who believed that a huge used car market was waiting to be tapped. This group of car purchasers were the ones in most need of easy credit.

Part of Answer — Relaxed installment buying was regarded as only part of the answer to crack the consumer's sales armor. Dealers in appliances admitted that the products they displayed had added a few knick-knacks in the postwar period. But there had been no genuinely radical revisions of models. Buyers owned old products almost as good and good looking as new models and were likely to make the old last.

KOREA: Nail Factory Keeps Going

Still intact in the rubble of Inchon, it is one of the few industries left . . . Raw materials are chief problem . . . Machinery, power and production adequate—*By H. Brown & W. G. Wepfer.*

Inchon, Korea—Surprisingly intact, a Korean nail factory is still operating in the rubble of Inchon. A recent tour of this plant shows it to be one of the few manufacturing processes that has continued to function in this war-torn city.

Chief problem is supply and price of raw materials. In prewar days an unlimited supply of high grade low carbon wire stock was obtainable from Hungnam on the east coast of Korea or from the big steel mills in Japan and the United States. Since the war the price has skyrocketed to two and a half times its former cost.

Hard to Find—In addition, the supply is extremely scarce. Fifty pct of this raw material is scavenged from stockpiles of junk strewn about the countryside and from black market operators at exorbitant prices. Most of it requires heat treatment and cleaning. A small percentage has high phos and sulfur and must be discarded.

Machinery, adequate for the plant's capacity, is outmoded and requires excessive maintenance. New equipment is impossible to get. Replacement parts must be custom-made in an adjacent machine shop. There is sufficient electric power to supply the needs of the plant.

The supply of skilled and unskilled labor is unlimited and commands a higher rate of pay than laborers employed by other types of concerns or foreign powers (mainly the U. S.) operating in Korea. There are no unions, and the working day varies from 8 to 12 hr depending on the work load.

Layout—Plant layout is simple but effective. Flow of materials is a crude replica of our own modern straight-line production techniques. The building is one-story so all work is performed on the same level. Raw materials are dumped at one end, sorted and cleaned in a huge wooden vat. Wire which is too thick is extruded manually on a bench set aside for that purpose. All the wire is then annealed in the oven by heating to a dull red followed by a slow cool in the furnace. Stock is next run through a battery of nail machines set for the desired sizes.

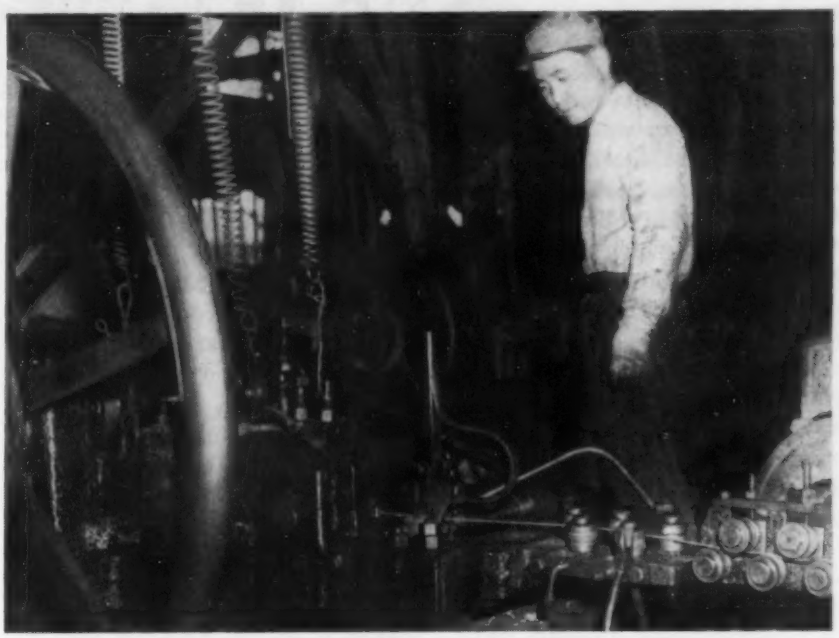
The nails are carted from the machines, packed and loaded for shipment. The washing vat, extrusion table, heat-treat oven, nail machines and packing platform are situated approximately in a straight line and in the same sequence as the operations.

No Sales Problem—At present the finished product enjoys a high degree of saleability. Major outlets are contractors, the R.O.K. army, private individuals, other manufacturing concerns and a few retail stores.

The nails are packed in straw sacks of amazing durability and shipped f.o.b. Inchon by rail, truck or sailing junk depending on the distance to be freighted and the available transportation. Due to the scarcity of this type of factory and the great demand for its product all customers come to the plant, making the sales problem practically non-existent.

Finished nails meet size specifications but are rough surfaced compared to U. S. goods. Heads are relatively flimsy. Considering the raw materials and equipment available, the product is good and the supply is adequate for Korean needs.

This "business as usual" is a remarkable demonstration of the morale of our Korean allies. Metalworking has rarely been carried on under more difficult circumstances. That the finished product is as good as it is testifies to a high degree of basic skill and determination.



MAINTENANCE: Korean mechanic checks operation of automatic nail machine.

This report comes to THE IRON AGE from LT Harold Brown, USNR, and LT JG William G. Wepfer, USN, two naval officers now on active duty in Korean waters. Opinions are their own, not the Navy's.

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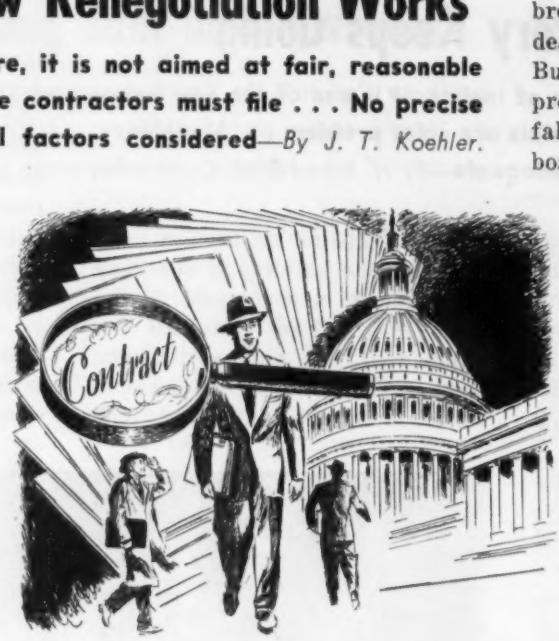
CONTRACTS: How Renegotiation Works

An emergency measure, it is not aimed at fair, reasonable profits . . . All defense contractors must file . . . No precise formulas . . . Special factors considered—*By J. T. Koehler.*

There is no more justification for waste of public funds when the government is buying material in vast amounts for the defense of the country than there is when it is buying for peacetime needs.

As a safeguard, Congress has adopted the policy that sound execution of the national defense program requires elimination of excessive profits from contracts and subcontracts made with the government for defense purposes. This policy is clearly stated in the Renegotiation Act of 1951, which was passed without an opposing vote in either House.



Renegotiation is an emergency measure only and should have no place in a peacetime economy. Its main purpose is not to produce revenue. It is, rather, a means to induce closer pricing and profit control.

Fair Profit—Renegotiation does not operate under precise formulas as to percentages of profits which a contractor may be allowed. Nor does it call for detailed audit of a contractor's books as a standard practice. It is not intended to deprive a contractor of the right to make a fair and reasonable profit.

Renegotiation operates on the basis of the contractor's own report of his receipts or accruals from all of his defense contracts at the end of his fiscal year. This report is reviewed by the Renegotiation Board and a determination is made as to whether he has realized excessive profits.

This determination is a matter of judgment and entails full consideration of all factors entering into a contractor's particular case.

Who Files—All contractors and subcontractors having renegotiable contracts with any of 19 defense agencies are required to file with the Renegotiation Board a report of total income received or accrued on and after Jan. 1, 1951, from all of their defense contracts.

Normally this report is to be furnished within 3 months after the close of the contractor's fiscal year. However, the board extended the filing time for all contractors with fiscal years ending on or before Dec. 31, 1951 to May 1, 1952 for RB Form 1 of the Report, which calls for preliminary information, and to July 1, 1952 for the more detailed part of the Report, RB Form 1B.

Total Amount—These forms are to be filed by all contractors and subcontractors having income from renegotiable contracts regardless of the amount. A contractor reports on the aggregrate amount received or accrued from all his renegotiable contracts.

If the contractor or subcontractor received less than $250,000 from all of his renegotiable contracts, or $25,000 in the case of a broker, manufacturer's agent or dealer, he will not be renegotiated. But he must still file a report. To prevent an undue burden on those falling under these amounts, the board requires that only a few questions on RB Form 1, which does not call for financial data, be answered. The second part of the report, RB 1B, need not be submitted.

Exemptions—Not all defense contracts are renegotiable. Some have been exempted by the Renegotiation Act and some have been exempted by the board. These fall into two classes—**Mandatory,** which the act requires the board to exempt, and **Permissive,** which the board may exempt at its discretion. There is also a statutory partial mandatory exemption for subcontracts for new durable nonproductive equipment.

Mandatorily exempted contracts and subcontracts include:

> Agricultural commodities in a raw or natural state; and products of a mine, oil or gas well, or other mineral or natural deposit, or timber, which has not been processed, refined or treated beyond the first form or state suitable for industrial use; and contracts or subcontracts with common carriers or public utilities when made at rates not in excess of regulated rates.

In addition, the board must exempt any contract which it determines does not have a direct and immediate connection with the national defense.

Stock Items—A major permissive exemption granted by the board is that relating to stock items which are customarily purchased for stock in the normal course of the purchaser's business and which may be used both in renegotiable and non-renegotiable production. This exemption does not apply, however, if the material is purchased specifically for use in one

John T. Koehler, Renegotiation Board chairman, has had a long and distinguished career in government service. Prior to his present appointment, he served as Assistant Secretary of the Navy and was instrumental in reorganization of the former U. S. Maritime Commission into the Maritime Board.

or more renegotiable defense contracts.

The contractor's greatest problem will be that of deciding which of his contracts are renegotiable. For the contractor with a direct contract with a government defense agency this is considerably simplified. The subcontractor who may be furnishing materials to a large number of customers, some having renegotiable contracts and some not, may have more trouble.

Not Final—Presence or absence of a renegotiation clause in a contract is a clue to renegotiability, but is not final. Whether or not the clause is included in a contract, it is the contractor's responsibility to ascertain whether the contract is subject to renegotiation.

The Renegotiation Board has recognized the problem of segregation in its regulations. It has gone to considerable lengths to avoid imposing an undue burden on those who must report. The stock item exemption is but one of these remedial measures.

One chapter of the Renegotiation Board regulations—Part 1456—"Methods of Segregating Renegotiable and Non-renegotiable Sales," is devoted entirely to a description of methods by which this determination may be made. This gives a number of methods. If none of these is adequate, the board will not disapprove any method which, under the circumstances, affords the best basis for a reasonably precise determination.

Screening—Contractors' reports on renegotiable sales are sent directly to the Renegotiation Board in Washington. There they are screened to eliminate those which show total income below the floors of $250,000 for contractors and subcontractors, and $25,000 for brokers, agents, and dealers, and those which clearly show no excessive profits.

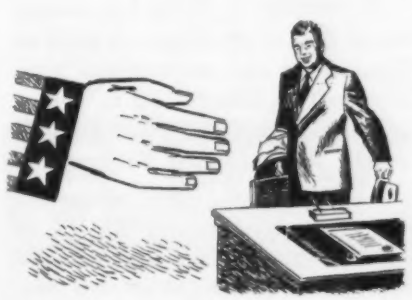
Contractors are required to file Form RB 1B, Statement of Income, within 60 days after the due date for filing Form RB 1. This form is exactly as its title describes it,

a statement of income from various sources including renegotiable business. Expense incurred by the contractor must be apportioned between renegotiable and non-renegotiable business. The form requires the contractor to furnish a detailed statement as to the methods employed in allocating his expenses.

Allocation of expenses is covered in the regulations. In effect, the Renegotiation Board will generally recognize any allowable deduction under the Internal Revenue Code to the extent allocable to renegotiable business in accordance with the accounting methods normally used by the contractor in his business.

Local Level—After screening, the report is assigned to a regional Renegotiation Board, normally the one nearest the contractor. Boards are now located in Washington, Chicago, Los Angeles, and New York. Additional boards are to be established in Boston, Mass., and Detroit, Mich.

Nothing more is required of the contractor until he receives a registered letter from the regional board giving formal notification that renegotiation proceedings are open. This marks the beginning of the actual renegotiation process,



and is not meant to be nearly so formidable as it sounds.

The contractor will next hear from the Renegotiation Board representative assigned to his case, who may arrange to meet with him either at the contractor's office or at the regional board. The representative will go over the contractor's report. If necessary to arrive at a true evaluation of his case, he may call for additional figures or information. The contractor will be given every opportunity to present his case in full.

A contractor has little to fear from renegotiation if he proceeds as though he had obtained his contract under competitive conditions during normal times, and operates with the same regard for efficiency, prices, costs, performance, production standards, and economy in the use of materials.

Individual Treatment—The Renegotiation Act has made it abundantly clear that in the determination as to excessive profits each contractor shall be treated as an individual case. He must be given credit for good business practices and performance in carrying out defense contracts. This principle is embodied in what are usually cited as the six statutory factors of the Renegotiation Act.

The act also requires that favorable recognition be given to the efficiency of the contractor, with particular regard to attainment of quantity and quality production, cost reduction, and economy in the use of materials, facilities and manpower.

Other factors which must be taken into consideration include:

> Reasonableness of costs and profits; amount and source of public and private capital employed; extent of risk assumed, including that incident to reasonable pricing policies; nature and extent of contribution to the defense effort; and character of business.

Across the Board—These are factors in the renegotiation proc-

(Continued on Page 91)

STEEL: Start Military Set-Asides

Producers to be directed to hold specified tonnages for defense needs . . . Cold-finished bars will be guinea pig . . . Plan starts Aug. 1 on monthly basis—*By A. K. Rannells.*

Control agencies are getting ready to try out a system of set-asides to provide for meeting military requirements while other types of controls are being lifted.

Cold-finished bars have been selected as the guinea pig.

Beginning Aug. 1, producers will be required to reserve specified tonnages of 1½-in and larger bars strictly for shipment on military orders.

These set-aside tonnages are to be established on the basis of estimated monthly needs for military production. The amounts are to be divided up between mills on the basis of past allocation directives to the industry.

Temporary Shortage — As officials see it, this plan likely will bring on a temporary increase in civilian shortages. But it is also seen as preventing "disruption in mill operation caused by the use of directives for meeting military needs."

This supports a growing belief that controls chief Henry H. "Joe" Fowler is ready to decontrol steel —but that he intends to do it in his own time and in his own way, despite pressures from within and without his two control agencies.

Industry advisers want immediate relaxation of controls and complete decontrol beginning with the fourth quarter, except for military priorities. Agency advice is to move slowly until at least the first of the year.

Gradual Removal—But so far, Mr. Fowler is sticking to his own timetable which he unwrapped about 2 months ago. This is an "orderly"—that is, gradual—removal of controls during last-half 1952. Nothing much would remain but military priorities beginning with first quarter 1953.

This stand was repeated when he appeared before a Senate committee last week which was pondering his confirmation to succeed Manly Fleischmann as head of the control agencies.

Other moves in this "progressive relaxation" have been revealed over the past several days. One, of course, was the outright revocation of the lead orders (M-38 and M-76) and removal of all but inventory controls over zinc (M-9).

Metal Orders Revoked

National Production Authority last week revoked outright five metal orders and modified a sixth because of increasing availability of these materials.

Revoked were M-48 (bismuth), M-19 (cadmium), M-38 (use of lead), M-76 (distribution of lead) and M-39 (antimony).

Order M-9, into which all zinc controls were incorporated in March, has been modified so as to remove all allocation and use restrictions. Inventory controls are retained although slab zinc users are now permitted to carry a 60-day inventory.

Construction Eased — But of more significance were the actions with respect to use of steel in construction.

Beginning July 1, the ban on certain types of construction such as amusement and recreational projects will be lifted. Up to 5 tons of steel, including 2 tons of structurals, may then be self-certified.

As of the same date, residential builders may self-certify 1500 lb of structurals in addition to the amount of carbon steel now permitted. Chemical plants may obtain 2000 lb. of stainless.

Later, beginning Oct. 1, the self-certification ceiling for commercial building will be increased to 25 tons of carbon steel per quarter with no restriction as to how much of the tonnage can be structurals.

Mr. Fowler is careful to point out that future decontrol planning is based on the assumption that there will be neither a steel strike nor an all-out war.

Metal Can Controls Modified

Amendment of National Production Authority's metal can order (M-25) makes 12 changes relaxing previous restrictions, largely with respect to use.

Revisions may increase somewhat can requirements for steel, but will not increase their use of tin. Tin allocations will remain at present quarterly levels.

Industry Controls This Week

Cans—Amend. M-25 relaxes restrictions on use of metal cans.

Metals—Revocation of M-48, M-19, M-39, M-38, M-76 lifts controls on bismuth, cadmium, antimony and on the use and distribution of lead. Amend. M-9 removes allocation and use restrictions on zinc.

Petroleum—Amend. 2, M-46A explains how petroleum operators may get priorities to obtain materials for use outside the U. S. and Canada. Resellers of liquefied petroleum gas are granted a ceiling increase under SR 7, CPR 17.

Plumbing Fixtures—SR 26, CPR 22 requires manufacturers of enameled cast iron and cast brass and vitreous china plumbing fixtures to adjust ceiling prices in relation to ceilings established under GCPR.

Latest Government Appointments

Washington has recently announced the following appointments in defense and related agencies:

John H. Flagg, director, General Components Div., NPA;

H. G. Schoeninger, industrial analyst, Engine & Turbine Div., NPA;

Harry N. Stein, assistant to director of enforcement, OPS.

New Export Quotas Set

Application for licenses to export copper, aluminum, and tinplate must be submitted within the 2-week filing period set for each quarter, regardless of whether the exporter has the materials in his possession.

In the case of steel, however, the U. S. Office of International Trade will accept, at any time, license applications covering CMP steel actually in the applicant's possession. Supplementary amounts often become available after the regular filing period.

Meanwhile, preliminary third quarter export quotas under CMP have been established as follows:

Refined copper in cathodes, billets, and other crude forms, 12,000 short tons.

Copper base alloy ingots, 650 short tons.

Combined quota for copper, brass and bronze scrap, except No. 1 copper and brass mill, 3000 short tons.

Aluminum, 1,190,000 lb for regular commercial export and not including 810,000 lb set aside for foreign mining and oil production aid.

At the same time, OIT said it had increased the second quarter export quota for secondary tinplate by 50,000 tons to bring the quarter's total to 125,000 tons.

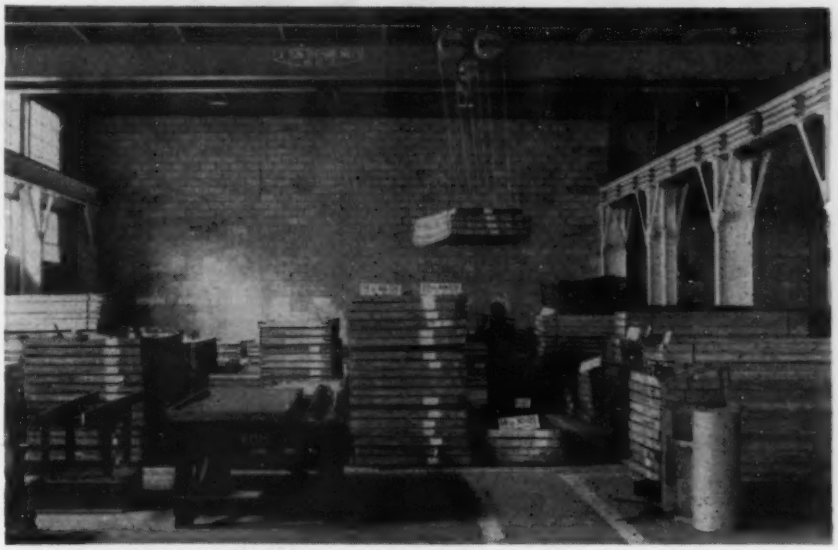
Plumbing Fixture Prices Change

Maximum prices allowed by General Ceiling Price Reg. to manufacturers of vitreous china and enameled cast iron plumbing fixtures must be cut by 5 pct, while producers of cast brass plumbing fixture trim may raise GCPR ceilings by 1.7 pct.

This adjustment, Office of Price Stabilization says, brings top allowable prices for these products into line with the general level of ceilings that would be created by use of price-determining provisions in CPR 22 (general manufactures).

Ceilings set under the new order (Supplementary Reg. 26 to CPR 22) are in lieu of a manufacturer's right to establish ceilings under the price-determining provisions of

it's thriftier . . . THROUGH THE AIR



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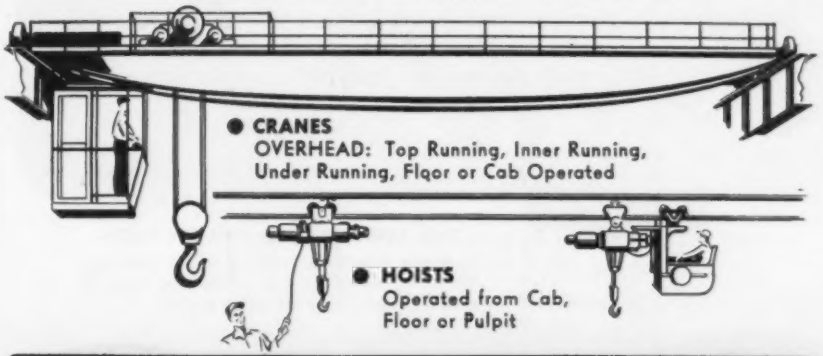
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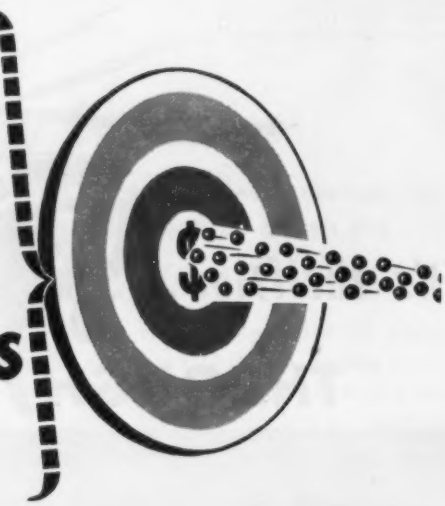

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It shows where the average blast cleaning dollar is spent and how savings can be made. Send for your copy today.

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TRU-STEEL SHOT

CPR 22. The manufacturer may choose to apply for Capehart adjustments under SR 17 or SR 18 to CPR 22, but in doing so he cannot use SR 26 provisions.

An appendix to the new order lists the bathtubs, lavatories, and other items covered by SR 26. The regulation became effective on May 20.

NPA Approves Building Projects

National Production Authority approved a total of 1069 commercial, religious, municipal, and entertainment type projects during the month of April and approved material allotment schedules for the third quarter.

By project, retail stores led the list with 249 units approved with an estimated construction cost of $144 million. Offices and loft buildings ranked second, with 109 projects for $34 million.

Warehouses rated third, with 84 approvals for an estimated cost of $22 million. Also authorized were 121 churches and 28 jails.

While the approvals generally reflect the easier supply situation, the deciding factor in many cases was that the project was located in a distress area.

They included both deferred projects and new applications, since NPA is now getting its application lists reasonably well cleaned up.

Building Curb Easing Scheduled

Starting July 1, National Production Authority will begin easing its building restrictions by permitting increased self-certification of materials and removing its ban on recreational and entertainment types of construction.

Effective that date, builders of recreational type projects will be permitted to self-certify up to 5 tons of carbon steel a quarter (including 2 tons of structurals) as well as 200 lb of copper and 250 lb of aluminum.

At the same time, restrictions on the use of aluminum will be modified to permit limited self-certifi-

cation for all kinds of construction.

Beginning Oct. 1, the ceiling for self-certified steel for general commercial construction will be boosted to 25 tons per quarter.

At the same time, restrictions on structural shapes will be revoked and there will be no limit as to how much of this self-authorized 25 tons can be in structural shapes.

Refractory Capacity Called Ample

Federal control officials have been told by members of the refractories industry that capacity is now ample to take care of foreseeable needs and that no more certificates of necessity should be granted.

Original goal for expansion of the industry was set at an increase of about 31 pct above the 1948 production capacity. When present construction is completed, it is estimated, capacity will have been increased by close to 40 pct.

National Production Authority has been asked to intercede with Office of Price Stabilization and help work out possible price increases in view of a probable wage package which the industry fears it will be forced to accept.

End of Forging Ceilings Asked

Price control over brass forgings could safely be suspended, industry representatives have told the Federal Government, because most producers are operating at no more than 65 pct of capacity and prevailing product prices are slightly under ceilings allowed.

In lieu of suspended controls, the industry may have to settle for a proposed tailored regulation setting ceilings for forgings in general. Office of Price Stabilization expects to discuss such a regulation with a subcommittee representing all branches of the forging industry.

Spokesmen for brass forgers have made a number of recommendations which they would like to see in a tailored order, including an exemption for so-called "short" or "small" orders and an

a $ure $hot for $avings

14 REASONS WHY PRECISION FINISHING COSTS LESS WITH THE NEW LIQUAMATTE

Mechanical equipment for producing close tolerance finishes has finally been perfected. "Hand" finishes are now produced mechanically in a matter of seconds in the new Liquamatte without the operating difficulties usually encountered in these processes. A simplified method of wet blasting, the new Liquamatte has 14 advanced design features that lower finishing costs.

Typical heat treated forging die, one half of which has been cleaned with the Liquamatte using a fine mesh Liquabrasive.

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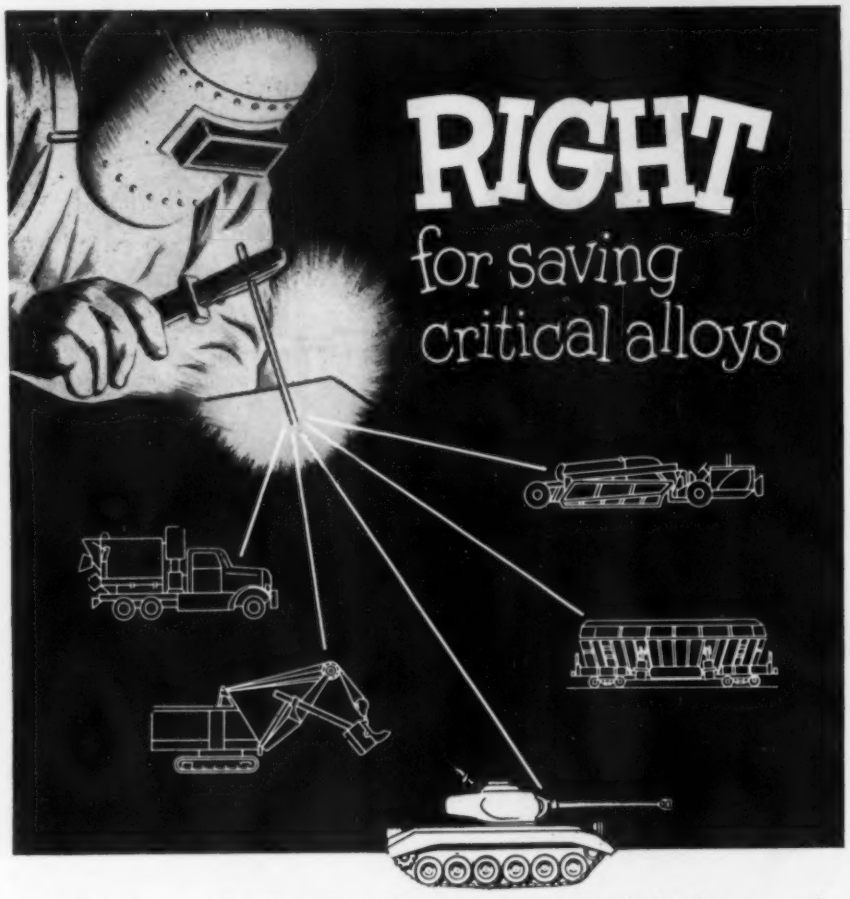

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—Controls—

exemption for producers with gross sales of less than $100,000 annually.

Most producers have reported they are now pricing under the General Ceiling Price Reg., rather than under the optional order, Ceiling Price Reg. 30.

Switchgear Lead Times Studied

National Production Authority is studying a proposal which would provide specific lead times for power switchgear and other electrical items covered by M-44.

Otherwise, the agency said, it was doubtful if production could be kept at a maximum and order board schedule slippage at a minimum under the expanding power program.

Meanwhile, the agency also expects to set up a special task force to decide if additional capacity is needed to provide switchgears and other items for the power expansion program. The agency's own study indicated that new capacity is not necessary.

Few Ask Capehart Steel Increases

Records at Office of Price Stabilization show that only seven steel fabricators have applied for Capehart-type adjustments amounting to about 2.6 pct of current price levels.

Firms coming in for OPS consideration are:

Crown Cork & Seal Co., Baltimore; Pittsburgh Tube Co., Pittsburgh; Sweet's Steel Co., Williamsport, Pa.; Taylor Forge & Pipe Co., Chicago.; Judson Steel Corp., Emeryville, Calif.; American Swedo Iron Corp., Danville, Pa.; Spencer Wire Corp., Union, N. J.

Increase sought is the maximum which OPS Director Ellis Arnall says the government will allow the steel industry, but speculation continues that the industry will get a bigger increase when the wage-price ruckus ends.

Furnaces:

CMP goods, fuel are headaches, but production has kept up.

Builders of industrial furnaces are a long way from being out of the woods on controlled materials but no essential production has been halted by the shortages. These and similar technical problems highlighted the business sessions of the 22nd annual meeting of the Industrial Furnace Manufacturers Assn. last week at the Homestead, Hot Springs, Va.

Builders of fuel fired furnaces reported that their customers were having increasing trouble with varying gas mixtures supplied by commercial gas companies. Nor has the natural gas shortage been licked in many areas. As a result most furnace builders supply burners for standby fuel, with an increasing trend to LP gas.

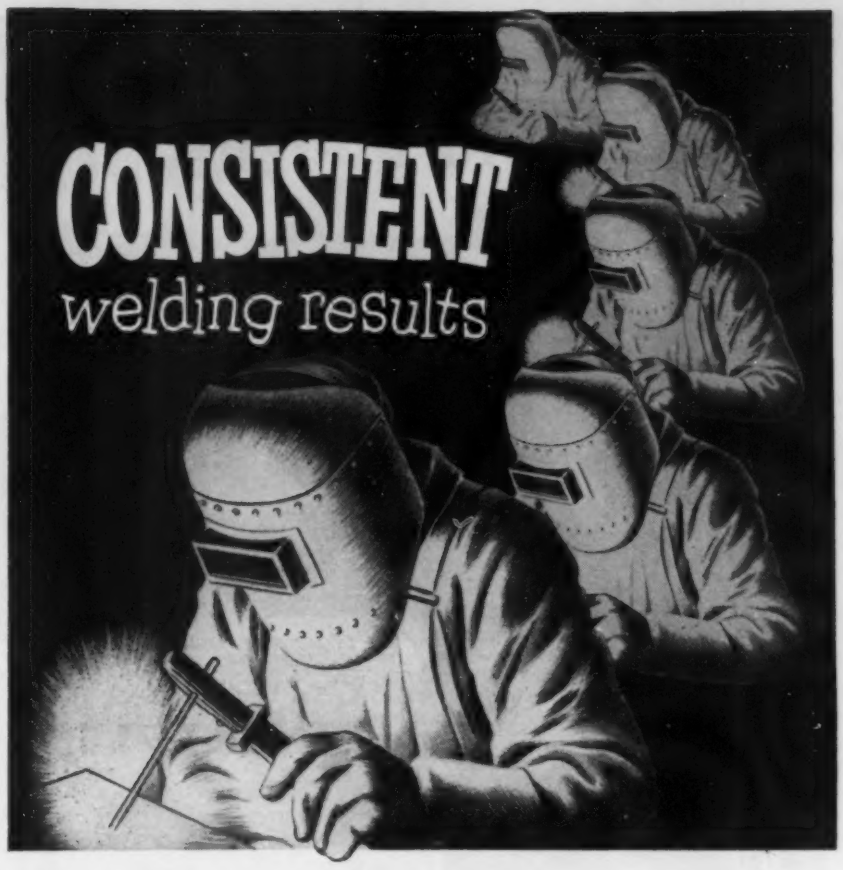
Officers—Reelected president of IFMA for the coming year was J. J. Walker, C. I. Hayes, Inc. C. H. Vaughan, The Electric Furnace Co., became the new vice-president. New board members are: C. I. Ipsen, General Electric Co., Hugh Pugsley, Swindell-Dressler Corp., A. L. Hollinger, Surface Combustion Corp., and Charles Hanlon, Hauck Mfg. Co.

To spread nickel supplies, NPA officials have been urging wider use of lower nickel steels (one is a 30 Cr, 20 Ni 1.5 Mo alloy) in furnaces. This met with some opposition and some agreement, leading to the conclusion that those who are sold on the high nickel alloys are really sold and there will be no unanimity on this subject so long as controls last.

Roll Makers Assn. Official Dies

George F. Tegan, 68, secretary-treasurer of the Roll Manufacturers Institute, Pittsburgh, died May 3 after a long illness. From 1920 to 1929, Mr. Tegan was Pittsburgh regional editor of THE IRON AGE.

Mr. Tegan was a native of East Cambridge, Mass. Following his graduation from Harvard, he worked for the *Boston Globe* for 21 years.



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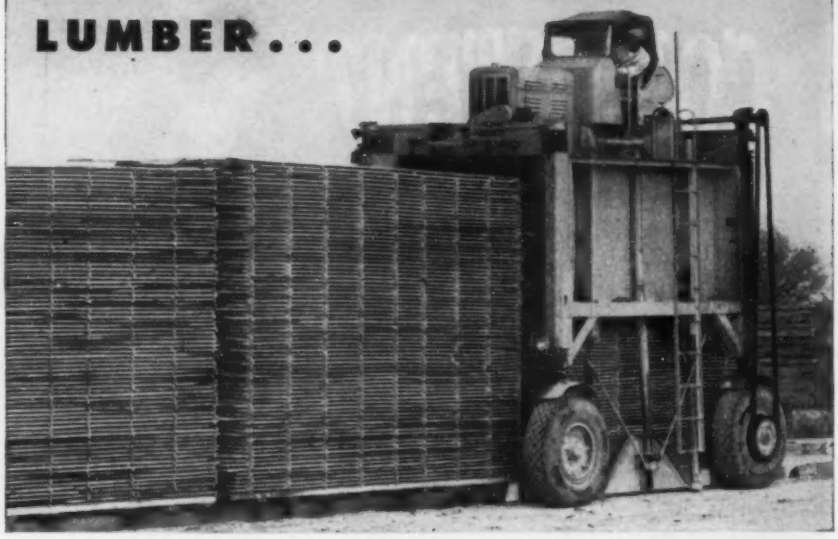

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Contracts Reported Last Week

Including description, quantity, dollar value, contractor and address:

Heaters, electric, 1444 ea, $58,589, C. C. Galbraith & Son, New York.

Fans, electric, 1650 ea, $33,043, Mimar Products, Inc., Brooklyn.

Visual aid projector, 2060 ea, $70,116, Charles Beseler Co., Newark.

Inner cover retainer spring, 1000000 ea, $32,002, Webster Spring Co., Webster, Mass.

Holder, increment assy M1A1, 31564 unit, $74,806, Welsh Mfg. Co., Providence.

Spare parts for materials handling equipt, var, $98,693, Hyster Co., Portland, Ore.

Spare parts for materials handling equipt, var, $235,483, Service Caster & Truck Corp., Albion, Mich.

Spare parts for materials handling equipt, var, $64,641, International Harvester Co., Melrose Park, Ill.

Spare parts for tank and automotive equipt, var, $104,717, Stewart-Warner Corp., Indianapolis.

Actuators, for var aircraft, 128 ea, $38,266, Lear, Inc., Grand Rapids.

Maintenance parts used on brake assy, 4480 ea, $38,231, The Goodyear Tire & Rubber Co., Inc., Akron, Ohio.

Valve, assy, 1080 ea, $97,824, Chandee-Evans, West Hartford, Conn.

Spare parts for army range #5, 84500 ea, $112,316, Karr Range Co., Belleville, Ill.

Replenishment of motor vehicles parts, 11000 ea, $119,020, Active Gear Co., Inc., Chicago.

Replenishment of tank and combat vehicle parts, 778 ea, $76,767, Garwood Ind., Inc., Wayne, Mich.

Replenishment of motor vehicle parts, 4800 ea, $194,453, United Motors Ser. Div., Detroit.

Replenishment of tank and combat vehicle parts, 3200 ea, $101,056, Barr Rubber Products Co., Sandusky, Ohio.

Replenishment of motor vehicle parts, 7750 ea, $101,296, Continental Motors Corp., Detroit.

Replenishment of tank & combat vehicle parts, 12580 ea, $71,713, Detroit Diesel Engine, Wayne, Mich.

Replenishment of hardware, 2546900 ea, $29,561, Stewart Warner Corp., Chicago.

Replenishment of motor vehicle parts, 300 ea, $29,043, Kenworth Motor Truck Corp., Wash.

Shell, chemical, 500000 ea, $3,807,500, York Shipley, Inc., York, Pa.

Final insp gages to tank, 1 set, $1,333,798, Chrysler Corp., Detroit.

Misc. truck body parts, var, $80,876, Autocar Co., Ardmore, Pa.

Case, cartridge, 2000000 ea, $714,400, Proctor Elec. Co., Phila., Pa.

Shell, heat 75MM, 300000, $1,740,000, David Bradley Mfg. Works, Bradley, Ill.

20MM feed mechanism, $1,212,201, Sunbeam Corp., Chicago.

Plug, arming, A.T. Mine, 200000, $85,000, Junior Toy Corp., Hammond, Ind.

Hull assy., M47 turret assy, 838, $9,206,386, Continental Foundry, East Chicago, Ind.

Shell, heat, 75MM, $1,418,410, Peerless of America, Chicago.

Fuze, 720000, $1,473,192, Speed O Print Corp., Chicago.

Delay plunger, $93,820, Dole Valve Co., Chicago.

Fuze, PD, M48A3, 580000, $1,193,102, Dole Valve Co., Chicago.

Tail fin assy, 2166000, $353,361, Universal Fabricators, New York.

Repair parts for heat exchangers, 57962, $107,925, General Motors Corp., Lockport, N. Y.

Repair parts for centrifugal pumps, 2273, $63,401, Allis-Chalmers Mfg., Milwaukee.

Repair parts for diesel engines, 105286, $65,145, General Motors Corp., Detroit.

Repair parts for carburetors & pumps, 41371, $141,904, Pacific Marine Supply, Seattle.

Repair parts for electrical control equipt, 27392, $90,964, Ward Leonard Electric Co., Mount Vernon, N. Y.

Repair parts for electric motors, 6350, $31,222, The Master Electric Co., Dayton.

Repair parts for switch boards, 2585, $136,282, ITE Circuit Breaker Co., Pa.

Repair parts for centrifugal & steam pumps, 2442, $56,386, Goulds Pumps, Inc., Seneca Falls, N. Y.

Computer, 8000 ea, $34,000, J. B. Carroll Co., Chicago.

Elbow assy, 69368 ea, $106,049, Avon Electrical, Jamaica N. Y.

Maintenance parts 39723, $39,723, Durham Aircraft Service, Inc., Woodside, N. Y.

Engine mounts, $122,475, Lord Mfg. Co., Erie, Pa.

Government Inviting Bids

Latest proposed Federal procurements, listed by item, quantity, invitation No. or proposal and opening date. (Invitations for Bid numbers are followed by "B," requests for proposals or quotations by "Q.")

Army Chemical Center, Md.
2 items of spare parts for flame thrower, 708 ea, 52-554CB, June 5.
2 items of spare parts for flame thrower, 22000 ea, 52-543CB, May 26.

General Stores Supply Office, Philadelphia.
Unions Sliver brazing, 18408 ea, 1-1042B, May 27.

Springfield Armory, Springfield, Mass.
Ejector clip, 161177 ea, 52-293B, May 26.
Spring clip latch, 161166 ea, 52-293B, May 26.
Spring hammer, 152222 ea, 52-293B, May 26.
Spring butt plate plunger, 149664 ea, 52-293B, May 26.
Machine repositioning, cal 50, M15, 350 ea, 52-291B, June 2.

Ordnance Tank Automotive Center, Detroit.
Adapter puller diff carrier, 2200, 52-3319B, May 23.
Adapter puller, 1996, 52-3319B, May 23.
Adapter puller, 2086, 52-3319B, May 23.
Adapter road wheel arm, 1496, 52-3319B, May 23.
Replacer hub output shaft, 975, 52-3319B, May 23.
Yoke eng fan shaft univ joints, 3000, 52-3369B, June 2.
Shaft eng fan drive short, 2200, 52-3369B, June 2.
Stand eng overhaul complete, 1209, 52-3377B, May 23.
Gear trans assy, 1100, 2-3024B, June 2.
Cone tapered roller bearing, 46100, 52-3674B, June 3.
Bearing roller tapered, 19000, 52-3677B, June 3.
Radiator assy, 1400, 52-3640B, June 3.
Kit repair hyd master brake cyl, 25000, 52-3369B, June 3.
Burner, 800, 52-3679B, June 4.
Button horn assy, 15000, 52-3679B, June 4.
Tool link pin setting, 1000, 52-3289B, May 27.
Cock shut off, 5000, 52-3646B, June 4.
Camshaft, 300, 52-3646B, June 4.
Insert valve intake, 1000, 52-3633B, June 4.
Piston standard w/pin 2600, 52-3633B, June 4.
Insert exhaust valve seat, 5000, 52-3633B, June 4.
Starter assy, 2600, 52-3643B, June 3.
Armature gen assy, 6500, 52-3617B, June 3.

Watervliet Arsenal, Watervliet, N. Y.
Steel pin firing part for 40 MM gun 8000, 52-175B, June 6.
Steel spindle part for 40mm gun 800 to 1400 ea, 52-175B, June 6.
Steel lever part for 40 MM gun 5500 to 6500 ea, 52-175B, June 6.
Steel crank part for 40 MM gun 1300 to 5200 ea, 52-175B, June 6.
Steel crank assy parts for 40 MM gun, 2400 ea, 52-1813B, June 9.

Air Materiel Command, Dayton.
Switch control stick gunbomb trim-tab, 1600 ea, 52-866B, May 20.

Quartermaster Purchasing Div., Chicago.
Refrigerators, 824 ea, 52-1529B, May 28.
Lock pad, 200000 ea, 52-1533B, May 28.
Helmet steel M-1, 88000 ea, 52-1519B, May 29.

Corps of Engineers, Philadelphia.
Extinguisher, fire, 2½ gal, 32588, Eng-36-109-52-606B, May 16.
Pump sump, 400, Eng-36-109-52-608B, May 17.
Fans exhaust, 375, Eng-36-109-52-537, May 16.
Arrester lightning, 1600, Eng-36-109-52-549B, May 16.
Clevis insulated, 19953, Eng-36-109-52-549B, May 16.
Crank handle steel, 528, Eng-36-109-52-600B, May 16.
Circuit breaker gen purpose, 1431, Eng-36-109-52-524, May 16.
Switch knife, 3658, Eng-36-109-52-505B, May 17.
Switch safety sheet steel, 1861, Eng-36-109-52-506B, May 17.

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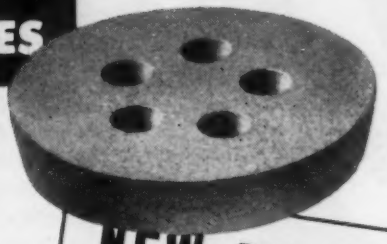

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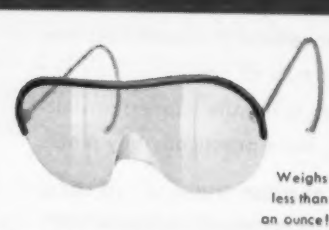

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Construction

Performance Bonds Not Required

Corps of Engineers will require bid and performance bonds from potential contractors only in cases where "special reasons" exist for the requirement—a change from former practice wherein Engineers asked for bonds on all advertised supply contracts involving $100,000 or more.

This action, as Small Defense Plants Administration interprets it, will give small companies a better chance to bid on defense contracts. SDPA requested the change, stating that while large concerns have no trouble in getting bonds from surety companies, it is sometimes difficult for smaller firms to obtain them.

Effect of this difficulty, SDPA says, is that "small business concerns have thus been barred from competing on contracts which they were qualified to undertake. Changes that have been agreed upon will . . . give added support to the congressional policy of obtaining the greatest possible participation by small business concerns in the defense production effort."

HHFA Grants Prefab Housing Loan

Loan authorization of $620,000 for 77 prefabricated houses has been granted to Rockland Development Corp. by the House and Home Finance Agency. The prefab houses, manufactured by Gunnison Homes, Inc., will be erected at Rockville, Md., and will range in price between $9,850 to $13,000 for two and three bedroom units.

In issuing the loan, HHFA pointed out that use of prefabricated housing releases skilled labor for defense work. The federal loan was the second granted to dealers of Gunnison Homes, U. S. Steel's housing subsidiary.

Mining Machinery Growth Needed

Defense Production Administration's office of Program & Requirements has come to the conclusion that manufacturers of mining machinery and equipment must spend another $6 million for expansion purposes in order to meet future requirements.

Financial

(Continued from Page 80C)

ss which cannot be translated into a dollars-and-cents financial report, but can be presented best in across-the-board talks with the renegotiators. They are spelled out in Part 1460 of the regulations.

Contractors who can prove that they are entitled to favorable consideration under these factors definitely should do so, for this may mean more profit can be kept.

In addition to evidence presented by the contractor on these points, the renegotiation representatives also will have access to appraisals of their performance by the agencies with whom they have contracts or subcontracts, as the board maintains close liaison with agency procurement officers.

Final Report—After all information has been obtained, a renegotiation report is prepared. This contains all accounting information necessary to arrive at a determination as to excessive profits. The accounting part of the report is submitted to the contractor for his concurrence. The renegotiation report also contains a report by the renegotiator and may contain a report by an industrial analyst.

On the basis of the complete renegotiation report and, where necessary, conferences with the contractor, a determination is made as to whether excessive profits exist, and if so, to what extent. If a refund is called for, the contractor may make it in a single payment or installments. Or the amount of the excessive profits may be eliminated by having the contracting department withhold it from sums due the contractor.

Tax Credit—He is given credit for Federal taxes so that he will not pay excessive profits twice, once in the form of taxes, and again as excessive profits determined by renegotiation.

If the contractor does not agree with the Renegotiation Board's determination, he may ask for a review. If this is not satisfactory, he may appeal to the Tax Court of the United States.

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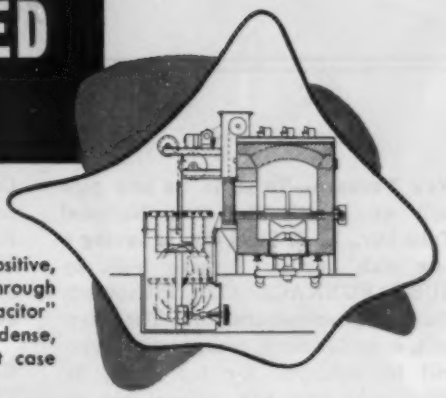
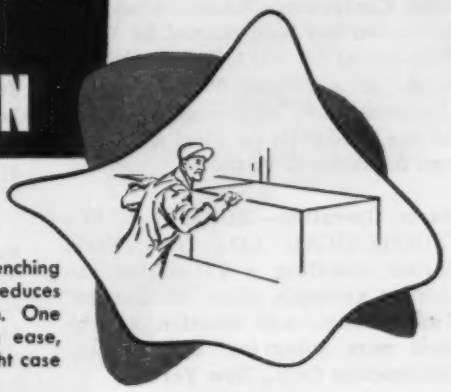


Combines the operating economies of large continuous furnaces with the flexibility of batch-type equipment. Positive, directed flow of furnace atmosphere through load, combined with the "heat capacitor" assures rapid, uniform heating on dense, bulk-loaded parts and even on light case work.

GREATER PRODUCTION



The Dow Furnace has established production records in plants throughout the country. Forced, uniform quenching from atmosphere gives full hardness, reduces distortion, eliminates decarburization. One man can operate *two* furnaces with ease, producing as much as 1500-lbs. of light case work per hour.

WIDER VERSATILITY

Whether it's gas cyaniding, gas carburizing, clean hardening or carbon restoration work, the Dow Furnace is capable of processing a variety of parts having a wide range of heat treatments. To demonstrate the close tolerances of heat treatments, send us samples of your own parts for processing.

AT LOWER COSTS

Reductions in direct labor, material handling, machining and cleaning costs, coupled with improved quality, have resulted in savings amortizing the original cost of the Dow Furnace in a few months. Gas cyanides for ¼ to ⅓ the cost of liquid cyaniding.

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Industrial Briefs

New Furnace—To serve its new pipe mill at Morrisville, Pa., National Tube Div., U. S. Steel Co., is having a new slab heating furnace built by RUST FURNACE CO., Pittsburgh, the designer-constructor. The new unit, a double-zone, recuperative type, will be equipped for top firing by either coke oven gas, natural gas, or oil.

Plant Conversion—Rehabilitation and conversion has been started by WIGTON-ABBOTT CORP., Plainfield, N. J., of a former World War II aluminum plant at Burlington, N. J., for the production of steel shell casings for Army Ordnance.

Starts Operating—HOOKER ELECTROCHEMICAL CO., New York, started operating a $2 million anhydrous ammonia plant at Tacoma, Wash. Design and erection of the plant were supervised by Chemical Construction Corp., New York.

Award Presented—Benjamin F. Fairless, president of U. S. Steel Corp., New York, was selected by the John Fritz Medal Board of Award to receive the next JOHN FRITZ MEDAL AND CERTIFICATE as "Champion of the American Free Enterprise System for Notable Industrial Achievement in the Production of Steel."

125th Anniversary—JOSEPH DIXON CRUCIBLE CO., Jersey City, N. J., marks its 125th Anniversary this year.

Offices Opened—David W. Jones, Jr., Denver representative, LUKENS STEEL CO., Coatesville, Pa., opened offices in The Goby Bldg., 1321 Bannock Street, Denver.

Moving Headquarters—The electric sink and cabinet department of GENERAL ELECTRIC CO., will be moved to Louisville.

Trained Personnel — Ordnance Corps plans to create a pool of trained electronics personnel who will furnish technical assistance for Army programs. PHILCO CORP., has made available its facilities in Philadelphia for training groups of selected Ordnance Corps personnel from its nation-wide establishments.

Contract Awarded—An Army Ordnance contract was awarded HARRINGTON & RICHARDSON ARMS CO., Worcester, in the amount of $11,147,000 for the manufacture of Garand 30-cal. M1 rifles and spare parts.

Ground Broken — WESTINGHOUSE ELECTRIC CORP., has broken ground for a $6 million steam and gas turbine development laboratory, at the South Philadelphia Works.

Golden Anniversary — On Monday, June 9th, DESPATCH OVEN CO. will hold an Open House at the offices and plant, 619 S. E. 8th Street, Minneapolis, to celebrate its 50th Anniversary.

Redesignates Plant — The Dunellen, N. J., plant, WORTHINGTON CORP., Harrison, N. J., has been redesignated as the Plainfield Works. Name and address of the new plant is: Worthington Corp., Plainfield Works, Plainfield, N. J.

Second Demonstration Unit — REYNOLDS METALS CO., Louisville, has added a second military packaging workshop to answer demand for foil packaging demonstrations. This demonstration unit, like the first one, is housed in a 30-ft all-aluminum semi-trailer.

"So that's the special flask you went looking for!"

Representative Appointed — THE TAFT-PEIRCE MFG. CO., Woonsocket, R. I., has appointed G. W. Brunton & Son, Inc., its representative in central and western New York.

New Building—WALTER KIDDE & CO., INC., Belleville, N. J., opened a new 6000 sq ft office, showroom, and service building at 4845 West Exposition Blvd., Los Angeles.

Larger Office—PRATT & WHITNEY, West Hartford, Conn., has relocated its branch office in a new building at 845 Main Street West, Rochester, N. Y., to expand its services to customers in Rochester.

Speakers' Bureau—The machine tool industry is establishing a speakers' bureau through which machine tool executives can be made available as speakers at service clubs, schools, and business and civic organzations. Formation of the bureau was announced by W. L. Dolle, president, THE LODGE & SHIPLEY CO., Cincinnati, at the Spring Meeting of the National Machine Tool Builders' Assn.

Moves Headquarters — THE BABCOCK & WILCOX CO., has opened offices in the recently completed Chrysler Building East at 161 East 42nd Street, New York. In its new headquarters the company will occupy the second through the sixth floors, which totals approximately 120,000 sq ft of space.

Plant Expansion—NEW ENGLAND BUTT CO., Providence, will make an addition soon to the company's plant. The proposed expansion will permit a production speedup in government orders.

Golden Anniversary—LAPOINT MACHINE TOOL CO., Hudson, Mass., is celebrating its 50th anniversary this year.

Polution Control—UNIVERSITY OF WISCONSIN, state authorities and industry will pool information in an attempt to solve the problem of air pollution. Meeting will be held in Madison, Wis., May 27-28. A film on smoke diffusion will be shown.

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Steel, brass, aluminum and stainless steel.

"1035" SET SCREWS
Cup point type, hardened and heat-treated.

Reg. W End Starts Output Race

Automakers hope for lifting of all controls by July 1 . . . Production nears free market levels . . . Model changeovers may come early if sales remain down—*By R. D. Raddant.*

Within the limits allowed by production quotas, automobile companies are staging a production race resembling that of the days prior to controls.

With Regulation W out of the way, the industry is now hopeful that all controls will be removed soon, perhaps by the end of the second quarter. Scheduled production is already approaching figures expected in a free market. flocking to sales rooms in the numbers expected. Pessimism is mostly confined to the dealer level, however. Top sales executives feel that there is little wrong with the market that more sales aggressiveness won't cure.

A lot depends on June and July. If sales persist in lagging, early model changeovers are likely. If they pick up and show that 1952 models can still find a market, production will have more emphasis on the present market.

Automotive Production

(U. S. and Canada Combined)

WEEK ENDING	CARS	TRUCKS	TOTAL
May 17, 1952	102,382*	29,313*	131,695*
May 10, 1952	102,162	28,347	130,509
May 19, 1951	122,331	33,796	156,127
May 12, 1951	123,721	34,781	158,502

*Estimated

Source: *Ward's Reports*

High Rate — General Motors, Chrysler, and Ford indicate they will turn out a combined total in April, May, and June that will surpass first quarter rates by more than 200,000 passenger cars. Independents, notably Nash and Studebaker, are also accelerating production rates.

Barring unforeseen shutdowns, 1,250,000 cars will be turned out in the second quarter. This is a creditable rate for any year and probably equal to what would be produced without controls.

Speculation now centers on the last half of the year. What goes on then will be strictly determined by sales and model changeovers.

Disappointing — Sales are admittedly not so good as hoped for. Lifting of Reg. W stimulated sales by an estimated 10 pct. But easier credit terms did not bring buyers

How High?—Boosts in automobile insurance rates are in the wind, but they may not be so high as freely predicted.

Many insurance men now believe that rates will not go up on liability insurance. A small increase is probably forthcoming in property damage or collision insurance.

Underwriters had a bad year in property damage insurance in 1951. Rate increases granted in most states in 1951 will not be completely felt until all policies issued prior to the increase have expired. Full effect of these increases may make the picture brighter to insurance companies.

$5 Rise—A good guess is that property damage rates will go up $5 a year on an average $50-deductible policy.

High cost of repairs and an upsurge in accident rates can be blamed for any increase. Rates are already so high that only about half of the drivers carry collision insurance. They prefer to take chances on repairs.

New Records—Automobile people take a unique pleasure in production totals, particularly in round figures. Whenever a new millionth in production totals is reached, it is the occasion for executive celebration and appropriate fanfare.

Last week, somewhere in the U. S., the 2 millionth car or truck rolled off an assembly line. Unfortunately, the specific vehicle could not be pointed to, but the date was noted and recorded.

Chrysler announced the production of the 100,000th Chrysler equipped with the 180-hp FirePower V-8 engine with the statement that "business is good and the trend on the part of Chrysler buyers is toward the FirePower V-8."

At the same time, Chevrolet Shell Div. in St. Louis turned out its 4-millionth artillery shell.

Not Luxuries—The Automobile Manufacturers Assn., in line with a new campaign against Federal excise taxes on cars, has brought out a new booklet to prove that cars are work tools and not luxuries in this motor age.

Based on a national AMA survey, the booklet points out:

Motor cars are used daily by 59 million persons in the United States. Nearly 70 pct of a typical motor's driving is for necessity purposes. Over half of all employed persons use passenger cars for earning a living.

The booklet, *The Work Cars Do*, is the opening gun of an AMA campaign. Target is getting Congressional pressure to pare excise taxes on cars, trucks and parts.

TANKS: Chrysler Will Run Arsenal

Selection no surprise . . . Only major auto company to show interest. . . Had run plant in WW II . . . Low output caused shift . . . Engineering bugs, procurement scandals had hurt rep.

The last government operated tank plant, the Detroit Tank Arsenal, will be transferred to private industry in July.

Army Ordnance announced last week that Chrysler Corp. will take over operations of the Arsenal which the company operated during World War II. The decision that Chrysler would be the new operator of the Arsenal was no surprise, however.

Shows Interest — Chrysler was a logical choice because of successful World War II management. Of the major automobile companies sounded out by the Army, Chrysler alone showed interest. All of the Big Three are already working on tank projects including Chrysler which is making heavy tanks and tank engines.

Reason for the transfer from government to private operations was bluntly stated by Army Secretary Frank Pace as failure to meet production schedules on the T-47 medium tank.

Troubles — Under Army Ordnance, numerous bugs had occurred during development of the tank. A chief problem was construction of the turret ring. Stories of these troubles leaked out to the public. Congressional investigations were held to probe alleged irregularities. Now the bugs seem to have been licked.

Probes resulted directly in the removal of Brig. Gen. Crawford from command of the tank arsenal. Other procurement irregularities resulted in the conviction last week of a manufacturer's agent, Wayne R. Campbell, on charges of swindling the P. L. Grissom Co., a parts supplier, of $56,000 in war contracts.

The Arsenal currently employs 7600 men. The Ordnance Corp. will retain jurisdiction over the development and design of vehicles and other lesser activities at the plant. The UAW (CIO) jumped in immediately with a campaign to organize the Arsenal workers.

Few Mechanical Changes

Reports from the Turin, Italy, International Auto Show indicate that in other than custom styling, European cars have changed little mechanically in the years after World War II.

Top engineers from Packard Motor Car Co. attended the show and consulted with engineers and stylists on the possibility of incorporating European flair in future Packard production models.

W. H. Graves, vice-president of engineering, reported that special custom-built cars were the outstanding features of the show. But latest mechanical features such as automatic transmissions were conspicuously absent in the Italian auto exhibition.

Looks have taken precedence over mechanical improvements.

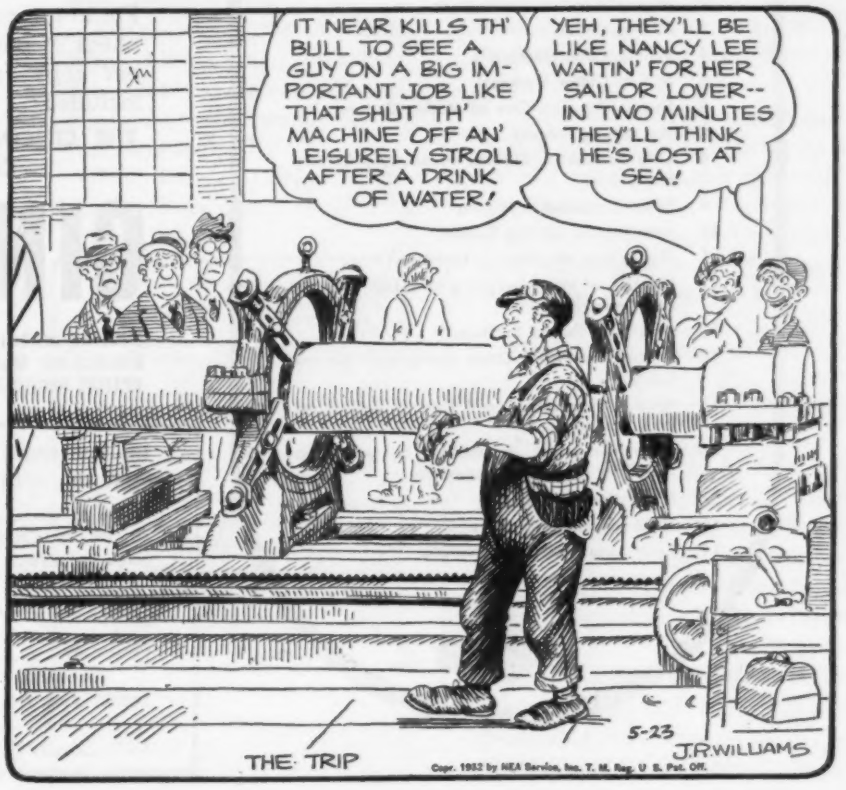
"Improvement" Pay Rise Granted

More than 80,000 Chrysler Corp. hourly rated employees will receive 4¢-per-hr "improvement factor" pay raises effective June 1.

Improvement factor increases are not to be confused with cost of living raises—the famous escalator clauses. Improvement factor raises were included in the contract in exchange for union approval of technical and mechanical improvements that might be objected to because of labor saving.

Salaried employees earning up to $750 a month will receive comparable raises. Yearly total cost of the raises to Chrysler will be approximately $6½ million.

THE BULL OF THE WOODS — By J. R. Williams


IT NEAR KILLS TH' BULL TO SEE A GUY ON A BIG IMPORTANT JOB LIKE THAT SHUT TH' MACHINE OFF AN' LEISURELY STROLL AFTER A DRINK OF WATER!
YEH, THEY'LL BE LIKE NANCY LEE WAITIN' FOR HER SAILOR LOVER-- IN TWO MINUTES THEY'LL THINK HE'S LOST AT SEA!
5-23
J.R.WILLIAMS
THE TRIP

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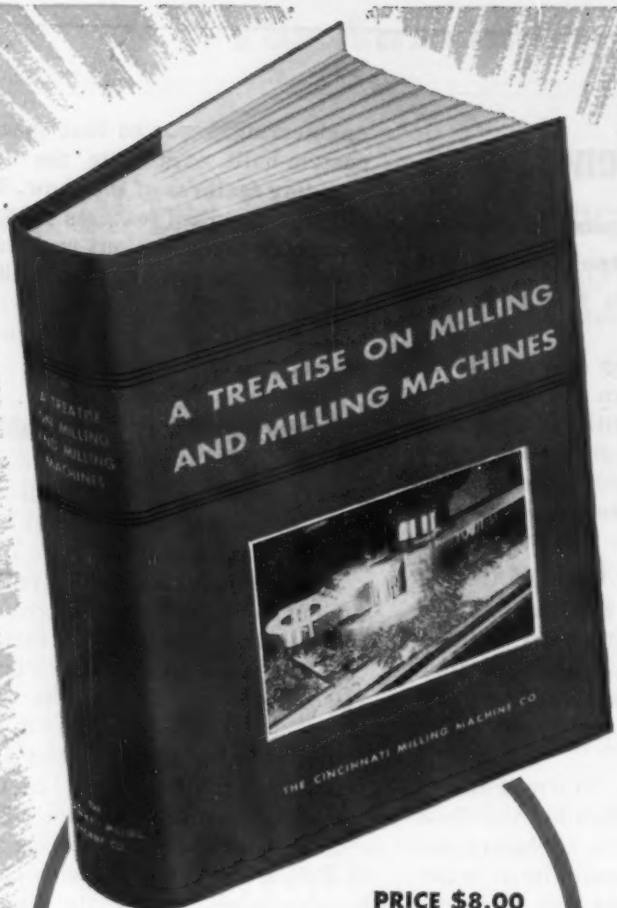

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9 Power Required in Milling
10 Mounting of Milling Cutters
11 The Milling Machine in Toolroom Work
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13 Milling of Helical Surfaces
14 Milling Cams and Other Surfaces of Curved Contour
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RFC Tightens Its Purse Strings

Heavy industry finds government funds for defense expansion harder to get . . . Must prove eligibility . . . Two steel firms refused . . . Lone Star withdraws—*By G. H. Baker.*

It's becoming more of a problem for steel companies and others in the heavy-industry field to obtain government funds for construction of defense facilities.

Reconstruction Finance Corp., still regarded by many industrial borrowers as an ace-in-the-hole credit source for expansions, is tightening up its purse strings.

Government lending officials deny there's any "trend" involved. They maintain they're simply following the prescribed rules in judging loan applications. Current rash of turndowns among metal firm applications is "just coincidence."

Must Prove Need—"We're operating under the standards set forth by Congress," an official explains. "If an applicant cannot show that he has first tried to obtain private financing, cannot show probability of repayment, and cannot meet our other credit requirements, he doesn't get his loan."

During the past week, RFC has refused the loan applications of two steel comanies, amounting to $255,950,000, and has announced the withdrawal of an application for $50,650,000 submitted by Lone Star Steel Co., of Dallas. The applications turned down: Kentucky Steel Corp. of Newport, Ky., for $200 million, and Central Iron & Steel Co., of Harrisburg, Pa., $55,-950,000.

Applications for fast amortization certificates by all three companies were refused earlier by Defense Production Administration.

Pending—Still pending for RFC action, however, are applications from other metalworking firms for loans over $5 million. Among these are:

Detroit Steel Corp., Detroit, $45 million for ingot capacity and construction of finishing facilities;

Trenton Steel Corp., Detroit, (subsidiary of McLouth Steel Corp.) $50 million for working capital and construction of a blast furnace, coke ovens, ore docks, etc.;

United Smelting & Aluminum Co., Inc., New Haven, $16 million for working capital and construction of an aluminum sheet rolling mill;

Tennessee Steel Corp., Oneida, Tenn., $9,871,000 for working capital and construction of a new steel plant with electrolytic furnaces;

Kearney & Trecker Corp., West Allis, Wisc., $5,232,000 for plant construction and equipment for production of machine tools;

San Manuel Copper Corp., Ariz., (subsidiary of Magma Copper Corp.) $111,288,000 to develop a mine with 10 million tons annual production, facilities for milling 30,000 tons of ore, and smelting 800 tons of concentrates daily and attendant facilities;

American Cement Corp., Harleyville, S. C., $6,350,000 for acquisition of a quarry and plant to be used in production of Portland cement.

Broad Significance—Although usual RFC policy is to remain mum about loan applications until decision is reached, the agency has disclosed receipt of the above applications because they are, as RFC Chief Harry A. McDonald puts it, "of such magnitude and broad significance as to warrant exception to the general rule."

Ivan College—Startling recent disclosure that Russia this year apparently will graduate as many engineers and scientists as the U. S. is giving congressmen and Selective Service officials new reasons for a basic re-evaluation of federal draft and manpower policies.

Selective Service headquarters has been claiming right along that it has exercised the greatest degree of liberalism consistent with national security in the exemption and deferment from the draft of engineers and scientists.

Disturbing—Congressmen Robert L. F. Sikes, D., Fla., says, for example, that he had always assumed that the annual crop of scientific graduates in Russia was "rather low." He admits that he is disturbed at the new figures, which were revealed by Walter G. Whitman, chairman of the Defense Dept. Research & Development Board.

Says Whitman: "The implications of that in terms of Russian technological development are rather serious, I think, to us."

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ALUMINUM: End of Curbs Proposed

Industry advances decontrol plan . . . Similar to recommendations of steel task force . . . Items in good supply would be freed now . . . Priorities to be retained for defense needs.

Hard on the heels of the steel industry decontrol proposal (see p. 80D), manufacturers of prime aluminum products have advanced an almost identical plan for lifting aluminum controls.

Basically, it calls for an open-end CMP beginning with the third quarter, immediate decontrol of products in good supply, increasing civilian allotment levels, and complete decontrol by the fourth quarter—and in no event later than Jan. 1, 1953.

Defense Priorities — Assurance that military and defense needs are met would be obtained by a system of priorities which give such orders the first call on aluminum supplies.

Broken down, it is proposed that all limitations be removed from several varied products such as powder, paste, wire and cable, and possibly tubing.

It is further recommended that third quarter allocations for civilian production be increased to 100 pct of base period consumption. This is based on the assumption that new capacity will come into production as planned.

Open Space—Nearly all manufacturers of prime products still have open space on their books for the third quarter, it was pointed out to control officials, although the lead time has almost expired.

Another step recommended for the third quarter is to raise the self-certification limit to 40,000 lb from the present 4000 lb.

Meanwhile, beginning July 1, control officials say, construction regulations will be relaxed to permit self-certification of 250 lb of aluminum for the third quarter for use in general commercial construction, including recreational type projects.

Beginning Oct. 1, the self-certification ceiling will be increased to at least 1000 lb per quarter.

Air Force Sells 40 More Tools

Air Force last week announced that 40 machine tools from its Offutt Air Base (Omaha) reserve would go on the auction block. The selection, although invitations were to be extended to 1000 manufacturers and publicized among many more, didn't sound too good.

The 40 machine tools were being offered from a reserve that had already been finely combed by defense contractors. The Air Force was one of the first to throw open its tool reserves at Marietta, Ga., Chicago, and Omaha, in 1951.

What did look slightly better was the announcement that in another 60 to 90 days the Air Force would declare surplus another 600 machine tools at Omaha. Where it had scraped them up was not announced, but the chances looked better on these than on the current 40.

The 40 items have been repaired, and lists are available from Irving Levinberg, Midcentral Air Procurement District, 165 N. Canal St., Chicago. Tools can be inspected June 2-6. Following inspection, bids can be made until 3:30 p.m., June 13.

Renegotiation Booklet Available

If your firm handles subcontract work involving controlled materials and you are uncertain whether the agreed terms are renegotiable, you will find assistance in a new 12-page document issued by U. S. Renegotiation Board.

Listed in Renegotiation Staff Bulletin No. 3 are three classes of subcontracts marked by Defense Production Administration CMP allotment and defense order rating symbols. These categories are headed by the designations "renegotiable," "non-renegotiable," and "possibly renegotiable."

The board points out that absence of an allotment or DO rating symbol does not insure non-renegotiability of a subcontract.

Subscribers to the board's regulations and supplement service will receive Bulletin No. 3 automatically. Buyers of separate copies may obtain them for 10¢ each, or $7.50 per hundred, from Superintendent of Documents, Government Printing Office, Washington.

Army Starts Jewel Bearing Plant

About 70 employees, some of them American Indians, will be on the payroll when the Army opens its pilot plant for jewel bearings production at Rolla, N. D.

The Rolla plant will be activated to develop new and improved methods of mass-producing bearings and to train a nucleus of skilled workmen capable of teaching large numbers of additional craftsmen for emergency assignments. The Army is especially interested in hiring Indians because it says aptitude tests show they have particular ability in handling small objects.

World War II machinery and buildings already in place will be used at the new installation.

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Therm-O-Flake Insulations are used in steel plant furnaces, stoves and ovens, and heating furnaces in many industries. The basic ingredient is exfoliated vermiculite. Therm-O-Flake is available in L. B. Block, Coating, Brick, Granules and Concrete.

Chem-Brix are new types of chemically bonded refractory brick with physical properties superior to those of fire clay brick. They assure high resistance to spalling and deformation. Hi-Silica Chem-Brix are recommended for open hearth checker chambers, heating furnaces and soaking pits . . . Carbon Chem-Brix for lining iron and Bessemer steel ladles.

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New Industrial Area Developing

Plants building in San Joaquin Valley, rich agricultural area . . . Was desert 50 years ago . . . Climate, good labor supply are major attractions . . . Start modest—*By T. M. Rohan.*

California's San Joaquin Valley was almost arid desert valley half a century ago. Today it is one of the richest agricultural areas in the West. On the heels of the lush crops, the valley is also developing as an industrial area.

Most of the manufacturing in the area has not progressed beyond the welding and machine shop stage, but greater future development is obvious.

Plants in the valley fall into two categories—those serving the area's agriculture and those merely taking advantage of a famous California climate, a plentiful labor supply, and the open-armed local Chambers of Commerce.

Local Steel—Steel for the small shops which dot the area is almost entirely supplied by independent warehouses or distributing subsidiaries of large steel firms. Most steel comes from western producers. Almost all is mild type in conventional bars, beams, rods and structurals and sheets. Few plants consume more than 10 or 15 tons per month with the exception of the can companies. These use large quantities of tinplate but are a seasonal operation.

Some of the more interesting industrial operations are the North American Aviation Co. shops at Fresno; Vendorlator Mfg. Co., also at Fresno; Turlock Iron & Machine Works at Turlock; and Waterman Industries at Exeter, one of the most modern foundries in the valley.

Plane Repair—At North American, damaged jet planes, many from Korea, are repaired and returned to service. During World War II most crippled warplanes were junked or set aside for pirating of parts, but planes are now so high priced that attempts are usually made to repair them.

The Vendorlator Mfg. Co. is one of the more truly eastern type plants in the valley. Unlike most other plants in the area, a large percentage of its output goes East. Although burdened with high freight charges it can sell vending machines competitively in the East because of low investment sheet-metal type buildings, very low fuel bills, and slightly higher production rate of locally recruited workers used to hard farm labor.

Western Origin—Turlock Iron & Machine Works is one of the pioneers in the hydraulic cylinder field. This is one industry where western development has progressed eastward. Western soil traditionally requires heavy duty, deep tillage implements, too heavy to be raised and lowered by hand. As midwest and eastern farming progressed from horse-drawn to mechanized units, farm machinery manufacturers then turned to the West for hydraulic lifting mechanisms.

"Is his wife a knockout!"

Turlock ships a good portion of its production East and some to South America. It is reputedly the largest specialized manufacturer of hydraulic rams in the industry.

Foundry—Waterman Industries at Exeter specializes in irrigation pipe valves but is best known for its 4½-year-old completely mechanized foundry. It has two 36-in., 600-lb furnaces, continually moving conveyor systems, mechanical shakeouts, etc. About 40 miles southwest at Delano a gas burning foundry furnace has been developed which uses an almost pure scrap charge.

These type units have been previously tried elsewhere with little success but by constricting the exhaust throat and charging hopper and using silimite bricks, enough heat is generated. This development was forced in 1947 when coke and pig iron were in short supply.

The valley had one wartime fling at big industry when Alcoa put in a 4-pot, government financed aluminum plant at Riverbank. This was in production for only a few months and was finally dismantled and equipment sold. It is now being adapted to produce shell casings and will be operated by the Norris Thermador Corp. of Los Angeles, a cartridge case, hardware and general manufacturer.

Labor Scarce—Skilled labor is scarce, most of it having been lured to aircraft plants in Los Angeles. Many return, however, to escape the crowded living conditions and hectic pace of the big city.

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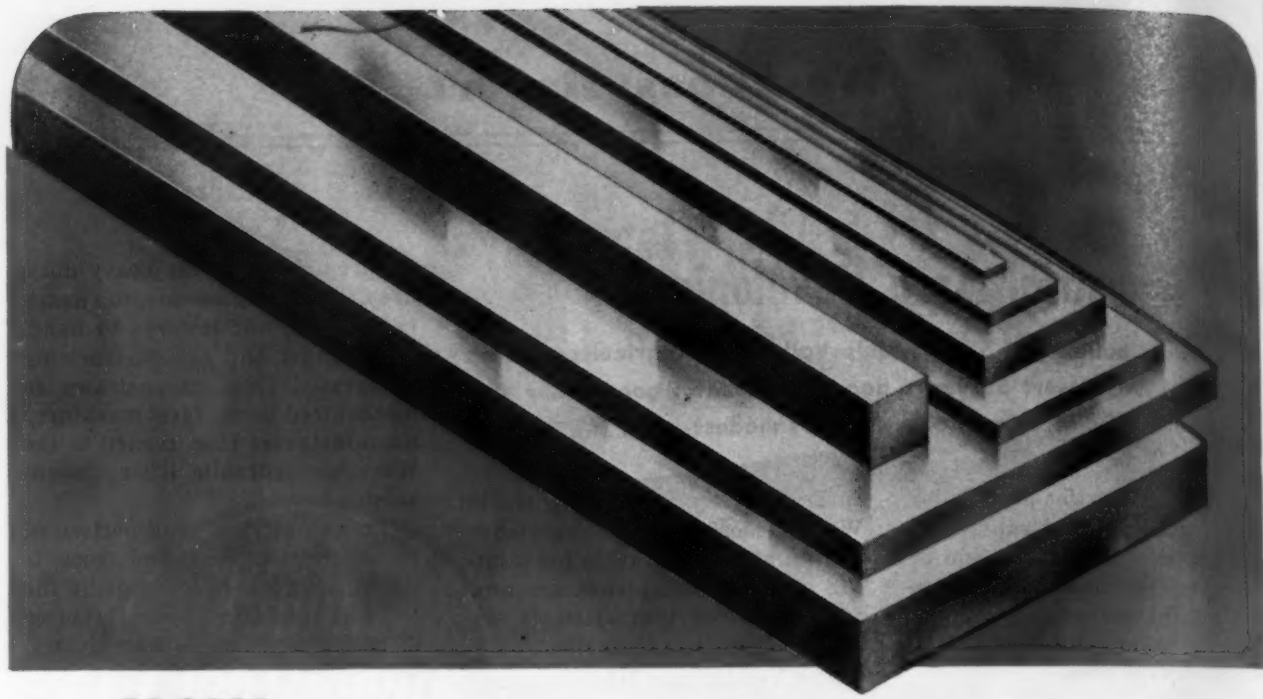

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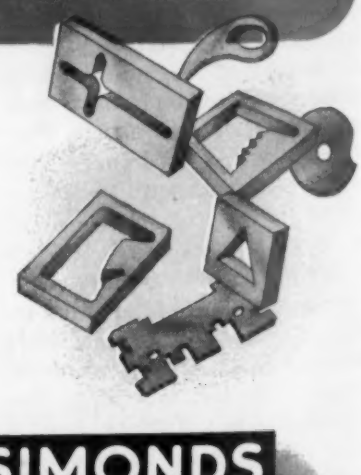
SIMONDS FLAT GROUND DIE STEEL



For longer-lived punches and dies . . . where greater production runs are needed between sharpenings . . . you can now get this new *Air-Hardening* type of Simonds Ground Die Steel, *which produces up to 50% more pieces per sharpening.*

5% chrome content makes this Air-Hardening Steel more wear-resistant and therefore better suited for punches and dies used on silicon or stainless steels, Monel, or other abrasive metals, and for gages and tools requiring top wear-resistance. What's more, this new *non-deforming* die steel is spheroidize-annealed for good machinability and consistently uniform hardenability. Wide hardening range of 1700 to 1800° F. makes it practically foolproof in heat-treating.

Furnished in many stock sizes in 36" lengths, all sizes are accurately ground to a thickness limit of plus or minus .001" with an extra-smooth surface finish of 25 to 35 micro-inches. Each piece is individually packaged, ready for scribing, shaping and heat-treating. See your Industrial Supply Distributor today.

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Dig—And You'll Find Metal in Gaspé

Oil and base metals searchers scout Gaspé Peninsula . . . Base metals teams have most luck . . . Area sure to be big producer . . . Steel demand high, bookings down—*By F. Sanderson.*

Gaspé Peninsula in Quebec has felt its share of exploration for raw materials. Both oil interests and base metal operators have sent teams out on the hunt. But in the final showdown it would seem that the metal men will reap the most advantage.

Several oil companies, including Imperial, have been searching for oil in Gaspé. They have met with little or no commercial success. In fact, most wells already drilled have been abandoned.

The story of base metal explorations is a happier one. They have been much more successful. And it is now clear that the area will yield a very substantial harvest of metals in the years to come.

Copper Lode—Noranda Mines, Ltd., which formed the Gaspé Copper Mines Ltd. late in 1947, has been scouting for minerals on its Miller group of 24 claims. Diamond drilling and other exploratory work has indicated 57 million tons of ore containing from 1 to 2 pct copper. Officials are not rushing their property into production although mine development is proceeding.

Plant design and engineering are underway. But it may be some time yet before actual work is started on the mill and smelter. Transportation and power are essential to the company's big production plans. It was earlier estimated that a 5000-ton milling unit would be installed. Now it is understood that the initial rate will be 6500 tons daily. Completion of the job will involve spending of upwards of $15,000,000.

Estimate Skyrockets—To further confuse the minds of the uninitiated Consolidated Candego Mines Ltd. is producing lead and zinc from the Gaspé Peninsula. It is operating a 50 ton mill there which will soon be stepped up to 70 to 80 tons daily. When Candego started milling in February, 1951, it had estimated ore at 10,000 tons. This estimate has now been jumped to 300,000 tons with average grade 18 pct combined lead and zinc, 8 oz silver and 0.04 oz gold per ton of ore.

Gaspé is as busy as a beehive. A number of other companies are sending exploration teams through the area. The majority of these are still in the prospecting stage. But the evidence is now heavy in favor of this area becoming a big name in the base metal production field in the future.

Up But Down—The high pitch of demand for iron and steel continues uninterrupted and shortages of the heavier steel items still prevail. Nonetheless, fresh bookings have slowed down. This has resulted from the spirited order placing that took place over the past 2 or 3 weeks. During this time consumers listed their needs for the third quarter.

Producers' books are closing on the scarcer materials. But there still remains some unfilled capacity on lighter materials to the end of September.

"Oh no, there's nothing wrong with your work. I just don't like you."

If USW Strikes?—The Canadian steel industry and steel union remain aloof of each other. Awaited is the Supreme Court decision on the steel seizure dispute in the U. S.—and subsequent settlement developments. However impatient the steel union here may be, it must bide its time until the pattern is set across the border in the labor settlement there.

No special discussions were reported this week. The local steel labor picture could become muddied if the American steel union pulls a strike to counter an unfavorable Supreme Court decision. How long will the Canadian steelworkers have to wait then?

Much More Coming—Domestic production of iron and steel is forging steadily ahead. March output of pig iron surged to its highest monthly rate in history. The new record was set at 240,755 net tons as compared to the previous highest rate of 224,511 tons produced in October 1951.

Other steel production showed the same intent of fracturing old records. Steel ingot and castings production hit their highs in March with output of 339,396 tons. This bettered the previous record of 317,034 tons last January.

The Lead Trend—Slashing of lead prices in the U. S. by 4¢ to 15¢ a lb in the past 2 weeks, was quickly followed by Canada's leading producer, Consolidated Mining & Smelting Co., which takes the lead in price-making in this country. Other producers fell in line.

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Tool Commission in Higher Esteem

Production Advisory Commission renamed . . . Now Advisory Committee on Production Equipment . . . No basic changes in duty . . . But scope of group has been widened—*By G. Elwers.*

Stature of the Production Advisory Commission has been heightened and its scope broadened, as a result of the direct interest of President Truman.

The President didn't mention the Commission directly, but when he asked Office of Defense Mobilization Boss Steelman to assemble a group to study production as related to defense, Steelman turned to the Defense Dept.

Here, a ready-made group of the nature the President specified was in the making. So ODM took it over. The name of the group has been changed to the Advisory Committee on Production Equipment.

Basically Same—Duties of the new committee, which was given the job of insuring the most defense production capacity at the least cost, will not undergo essential changes.

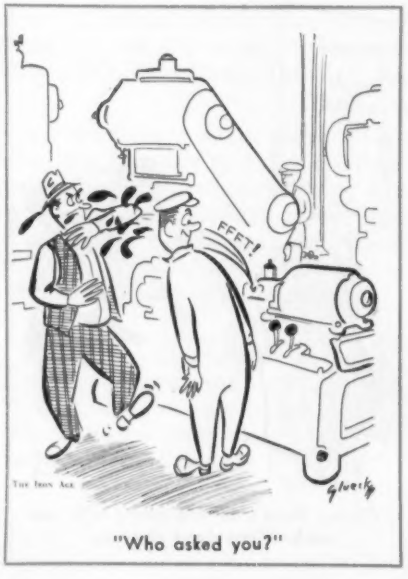
Recommendations will be made principally to the ODM director, a role being handled by John R. Steelman, and not to the Defense Secretary, as was announced earlier (THE IRON AGE, May 8).

A letter from President Truman to Mr. Steelman dated May 14, urged formation of a "group of experienced production people" who would study policies and programs developed to promote national security. His letter preceded the transfer and renaming action. The White House message indicated some concern over U. S. output of machine tools and related production.

Vance at Helm—At that time the advisory unit had met only once and had not filled out to its announced planned strength of seven members. On this score, Mr. Steelman advised Defense Secretary Robert Lovett that "it will not be necessary to complete establishment of that group."

Continuing as head of the committee is Harold Vance, chairman of the board and president of Studebaker, while Kaiser-Frazer executive Clay Bedford remains as a committee member. Other committeemen named by ODM are Manly Fleischmann, who will serve when he leaves his post as Defense Production Administrator on June 1, and Lt. Gen. K. B. Wolfe, Ret., former Deputy Chief of Staff, Materiel, for the Air Force. ODM says it will announce full membership shortly.

Defines Scope—The major significance of the switch is the broadened scope of the group under the new setup. In the Defense Dept. the tendency would have been to limit it to whatever the military thought were pressing problems of defense production. Under the ODM, the broader term "national security" defines the scope of the problems it will consider.



"Who asked you?"

Machine tool men can take heart from the constitution of the commission so far. All members are men known to realize the fundamental importance of machine tools. They are expected to be sympathetic to the industry's suggestions on taxes and other strengthening matters.

Research—A program of fostering tool engineering research has been begun by the American Society of Tool Engineers. Kickoff was a meeting of interested research men at the society's headquarters recently.

Discussion at this exploratory meeting covered such matters as the general nature of needed tool research programs, how to raise funds to be added to those put up by the Society, and appointment of advisory committees.

On being asked if there seemed to be a real need for research in tool engineering, one of the research men present commented that the need is so great that if private industry doesn't get to work on it it will be necessary for the government to do so. All of the others agreed that this is a field in which sufficient research is not being done.

Who Attended—Present at this first meeting were representatives from such research organizations as the University of Michigan, Ohio State University, Battelle Memorial Institute, Research Dept. of Champion Spark Plug Co., and Armour Research Foundation.

It is expected that the initial grant of the ASTE will be primarily for administration, and that most actual research funds will come from industry.

The Iron Age

SALUTES

Harold B. Ressler

New warehouse association president, he is an authority on steel merchandising and price problems.

HAROLD RESSLER grew up with midwestern steel. He was the lad who was hired by a steel warehouse on Chicago's Clinton Street back in 1904. The firm became Ryerson, and the lad who was hired as an office boy was this year elected chairman of the executive committee of Joseph T. Ryerson & Son, Inc. This week his industry acknowledged his contributions by choosing him president of the American Steel Warehouse Assn.

Harold's rise with Ryerson was swift. In 1914 he was appointed general manager for the firm at St. Louis. In the stormy days of the early '30s, he was elected vice-president in charge of sales. Harold is recognized as an expert in pricing problems, and has a broad understanding of the steel merchandising business.

Most closely associated with steel in the Midwest he knows the eastern steel picture as well, having served with Ryerson at New York, Boston, Philadelphia and Buffalo.

He is a recognized authority on good horses. Despite a full business day, Harold and Mrs. Ressler spend considerable time on Chicago bridle paths. And he has found time to direct the operation of a 400-acre farm at New Parish in southeastern Ohio, one of the show places of the state.

A native of Eaton, Ohio, he moved to Chicago at an early age and was educated there. His son David is now 33, and his twins, Burt and Harold, are now 42.

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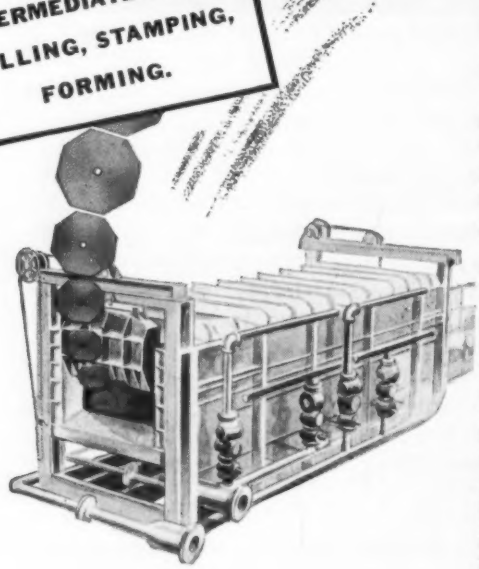

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The Iron Age

INTRODUCES

Arthur R. Purdy, Jr., elected president, A. R. PURDY CO., INC., Lyndhurst, N. J.; **Ralph W. Shaw, Jr.,** elected executive vice-president.

Edwin Olney Jones, elected senior vice-president and secretary; **Samuel E. MacArthur,** elected treasurer, will also retain his former title and duties as controller; **Gordon J. LeBrasse,** named acting director of research; FEDERAL-MOGUL CORP., Detroit.

L. A. Dixon, named executive vice-president, ROCKWELL MFG. CO., Pittsburgh.

F. P. Diener, appointed director of tests and research, UNIVERSAL ATLAS CEMENT CO., New York, subsidiary of U. S. Steel Corp.

T. V. Balch, named vice-president and director of contracts, E. F. HAUSERMAN CO., Cleveland; **Richard M. Hauserman,** appointed director of sales.

Edward M. Douglas, appointed vice-president in charge of special administrative matters; **Louis H. LaMotte,** appointed vice-president in charge of sales; INTERNATIONAL BUSINESS MACHINES CORP., New York.

Arnold E. Blitz, appointed sales supervisor in the ordnance field, PENNSYLVANIA SALT MFG. CO., Philadelphia; **Hubert A. DesMarais,** appointed general sales manager of Washington.

John von Rosen, appointed staff plant engineer, CHRYSLER CORP., Detroit. He succeeds Harry S. Wells, who has retired.

Paul F. Voigt, Jr., named consultant to the president on marketing methods and development of new products, SOLAR AIRCRAFT CO., San Diego; **Elliot C. Bacon,** named assistant manager, Research Products Div.

Thomas F. Finley, named assistant engineer, switchgear section, ALLIS-CHALMERS MFG. CO., Milwaukee; **George N. Lester,** named assistant engineer, Boston Works; and **Kenneth I. Johnson,** named assistant application engineer, processing machinery department.

James R. Weaver, appointed assistant to the vice-president in charge of manufacturing; WESTINGHOUSE ELECTRIC CORP., Pittsburgh; **James M. Wallace,** named manager, Meter Div.; **Edward O. Edney,** appointed manager of order service, Steam Div.

W. S. Schamel, named assistant technical director, Dust & Fume Control Div., AMERICAN WHEELABRATOR & EQUIPMENT CORP., Mishawaka, Ind.

John B. Girdler, appointed sales manager, VANADIUM CORP. OF AMERICA, New York.

F. J. Perry, appointed supervisor of ore movement, OLIVER IRON MINING DIV., U. S. Steel Corp., Duluth. He succeeds **Samuel Naismith,** who was transferred to Pittsburgh staff.

Robert Shannon, named manager, Hastings, Mich., Div., E. W. BLISS CO., Canton, Ohio.

James M. Robertson, appointed chief chemist in charge of quality control, all plants, WELLMAN BRONZE & ALUMINUM CO., Cleveland; **Robert C. Boehm,** named chief metallurgist; **Robert W. Spacek,** named assistant production manager, all plants.

Carl H. Golm, appointed branch manager, Saginaw, Mich., branch, FRUEHAUF TRAILER CO., Detroit.

W. H. Lagerstrom, appointed general manager, DAMASCUS TUBE CO., Greenville, Pa.

HARRY E. ORR, appointed assistant vice-president and manager of engineering sales, Vanadium Corp. of America, New York.

C. M. McCREERY, named vice-president, in charge of Rome Mfg. Co. Div., Revere Copper & Brass Inc., New York.

J. E. ASHMAN, elected executive vice-president, Power Tool & Rockwell Register Div., Rockwell Mfg. Co., Pittsburgh.

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Personnel

Continued

Ivan Speer, named engineering manager, AIRESEARCH MFG. CO. of Arizona. He replaces **Arthur J. Phelan,** appointed staff engineer, Los Angeles Div.

James H. Elkus, appointed assistant manager, BLAW-KNOX DIV., Blaw-Knox Co., Pittsburgh; **W. J. Kalmeyer,** appointed works manager.

Harry A. Rowe, appointed sales manager, Thomaston Div., PLUME & ATWOOD MFG. CO., Waterbury, Conn.

J. W. Hoover, appointed general transportation manager, Manufacturing Div., U. S. STEEL CORP., Pittsburgh.

Fred J. Ebeling, appointed general sales manager, DODGE MFG. CORP., Mishawaka, Ind.

Thomas Toby, appointed assistant manager of sales, New Pittsburgh office, RUSSELL, BURDSALL & WARD BOLT & NUT CO., Port Chester, N. Y.

R. W. Ramage, transferred to Hartford office as district sales manager, and **J. Earl Roemer,** transferred to Buffalo as district sales manager, BLISS & LAUGHLIN, INC., Harvey, Ill.

W. B. Denniston, appointed manager of sales, Eastern District, STAINPROOF, INC., Div. of Illinois Tool Works, Chicago.

Harold Maxwell, promoted to manager of sales, Eastern District STAINLESS SALES CORP., New York; **Joseph Clasen,** named assistant manager of sales, Newark warehouse.

George W. Edwards, named service manager, Special Service Div., BASIC REFRACTORIES, INC., Cleveland; **Charles R. Heilig,** named senior sales engineer, central district.

R. K. Compton, formerly personnel manager, manufacturing division, Hastings, Mich., named director of industrial relations, E. W. BLISS CO., Canton, Ohio.

A. S. AULT, elected vice-president-sales, Chicago Vitreous Enamel Product Co., Cicero, Ill.

WALTER M. HANNEMAN, appointed executive engineer, Shakeproof Inc., Div. of Illinois Tool Works, Chicago.

HENRY W. BORNTREAGER, named vice-president and director of sales, Gunnison Homes, Inc., New Albany, Ind.

RICHARD D. BAKER, appointed resident vice-president, Russell, Burdsall & Ward Bolt & Nut Co., Pittsburgh.

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The booklet contains engineering data on rivetless chain in pitches from 3" to 10½" and working loads from 3,000 to 130,000 lbs.; of drop-forged steel, alloy or cast chrome-manganese steels. Wilmot not only stocks the largest choice of chain sizes, but also furnishes the widest range of other conveyor parts: sprockets, traction wheels, flights, take-ups, shafting, bearings and trough in cast iron, ductile iron, carbon or chrome-manganese steel to fit the application. See why an increasing number of leading firms are cutting "down" time by depending on Wilmot for all conveyor replacement parts.

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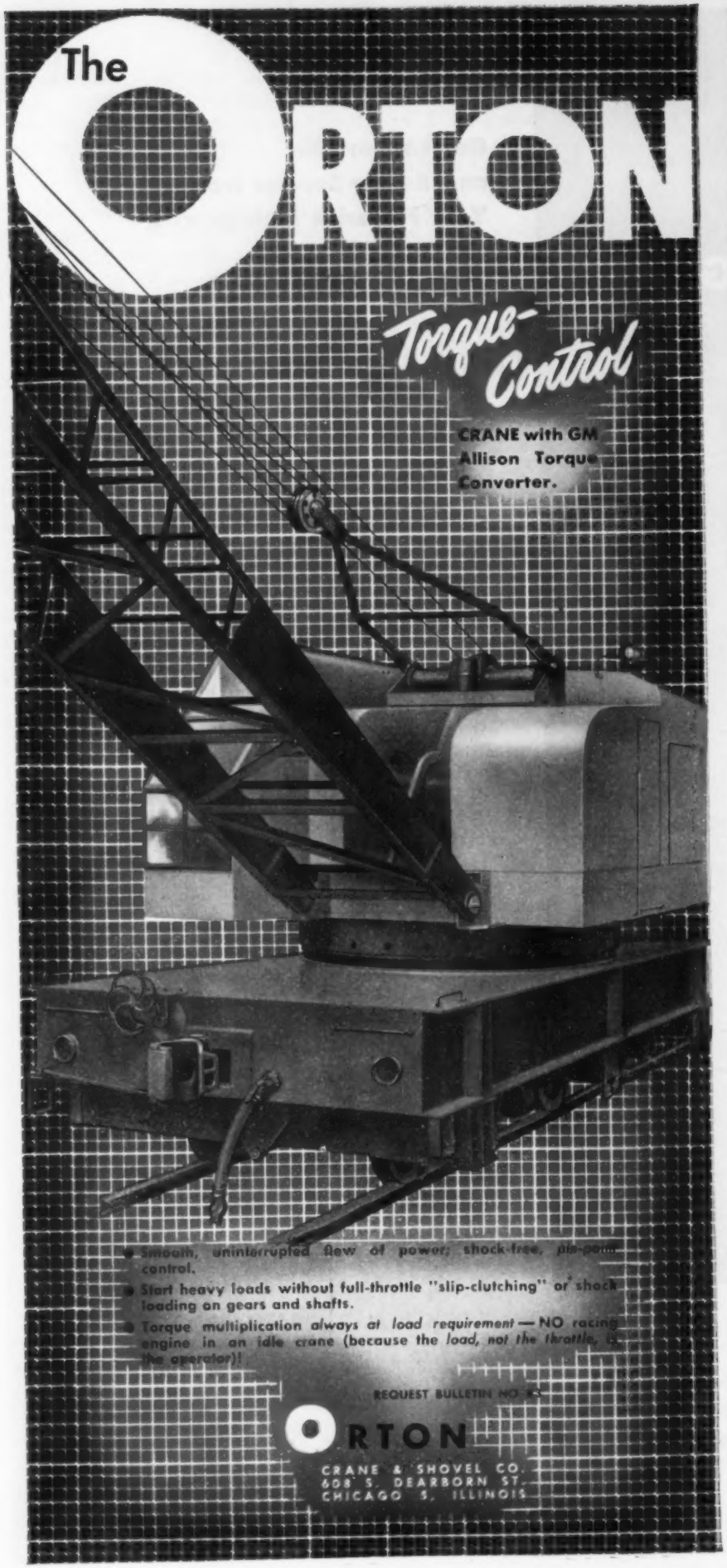
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Personnel

W. H. Harper, named assistant controller, A. M. BYERS CO., Pittsburgh. Mr. Harper succeeds **Rolf Grien,** who was recently named controller.

Raymond A. Rugge, appointed chief aeronautical engineer, MINNEAPOLIS - HONEYWELL REGULATOR CO., Minneapolis.

Richard A. Gehr, named sales manager of heaters and devices, Industrial Heating Dept., GENERAL ELECTRIC CO., Schenectady.

John Farran, joins J. H. CRISTIL CO., Edgerton, Ohio, as chemical engineer.

J. T. Cataldo, appointed assistant general manager, INTERNATIONAL RECTIFIER CORP., El Segundo, Calif.

J. R. Hutchison, appointed regional manager, Middle East, WORTHINGTON CORP., Harrison, N. J.; **Walter D. Johnson,** named Western Regional Supervisor.

Eugene J. Flesch, appointed assistant to the general sales manager, STANDARD TRANSFORMER CORP., Chicago.

Norman C. Owen, named general sales manager, WEBSTER-CHICAGO CORP., Chicago.

Hewitt M. McIntosh, made Midwest District Manager, Votator Div., THE GIRDLER CORP., Louisville.

OBITUARIES

Oscar N. Lindahl, 67, director of General State Authority of Pennsylvania and a former vice-president and director of Carnegie-Illinois Steel Corp., Pittsburgh.

Joseph S. Newell, 54, professor of aeronautical structural engineering at M. I. T.

Charles H. Fischer, 50, Supervisor of Sales Accounting, Carboloy Dept., General Electric Co., Detroit.

Ray D. Titus, 67, chief clerk, sales department, Bolt & Nut Div., Republic Steel Corp., Cleveland.

Chester N. Godfrey, 74, senior partner, Cram & Ferguson, Boston architectural firm.

Benjamin C. Sawyer, director of purchases and procurement, Bethlehem Fabricators, Inc., Bethlehem.

A Dream Comes True—

The Iron Age
FOUNDED 1855
Technical Articles

AUTOMATIC FORGING PRESSES feature new shell line

By John A. Verson
Executive Vice-President
Verson Allsteel Press Co.
Chicago

and

Henry Irwin
Chief Engineer
General American Transportation Co.
East Chicago, Indiana

Full automaticity of a high production hot forging shell line has proved successful. Fast production of closed die forgings on large mechanical presses which are equipped with hydraulic bolster pads is another feature of this press line engineered and built by Verson Allsteel Press Co. No manual labor is needed from the time the hot billet leaves the furnace until the finished hot forged shell drops onto the conveyer belt. A total shell concentricity of 0.015 in. is held at high production rates. Water cooled die pots and punches are used. The Transmat transfer equipment is air driven and electrically controlled.

Fully automatic handling of work pieces has long been the goal of mass production industries. In many types of operations such as machining, stamping and forming, full automatic transfer has been practiced. However, not until very recently has this principle been applied to hot forging or hot extrusion presses. Verson Allsteel Press was one of the leaders in applying automatic transfer to large tonnage press work. (See THE IRON AGE, June 2, 1949, p. 60.) When GATX took the government contract for hot extruded shells, it was decided to adopt this principle to a hot forging press line.

The shell line at General American Transportation Corp. is producing three sizes of artillery shells by the hot extrusion method. The plan began pilot plant operation October, 1951, and has just recently swung into full line production.

The heart of the shell line is the automatic transfer equipment which features fully automatic hot forging, extrusion and sizing presses. A unique and effective automatic transfer arrangement called Transmat has speeded up the shell production in which the product is not manually handled from descaler to the finished extrusion.

The automatic transfer equipment is pneu-

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Shells not touched by hand—

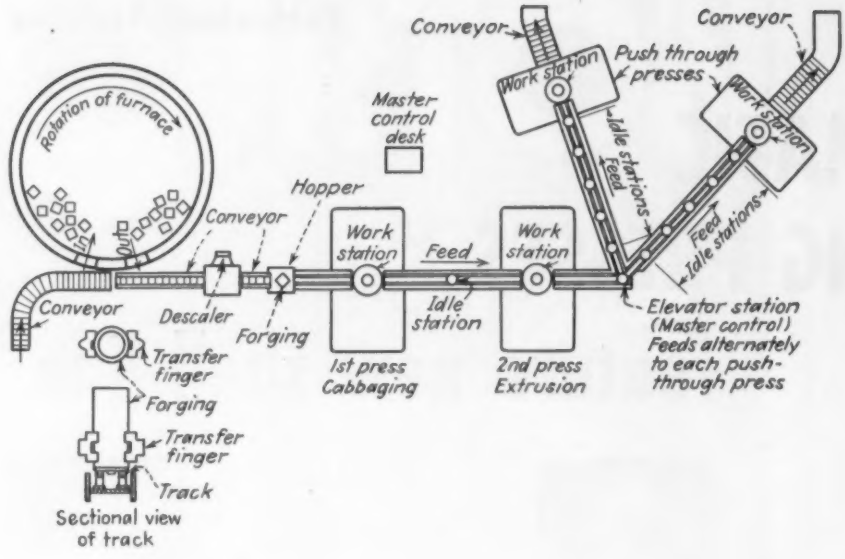

FIG. 1—Schematic plan view showing location of Transmat equipment. Forgings are carried vertically on transfer track as shown in detail at right. Entire line is controlled from master control desk.

matically operated, electrically controlled and all the air cylinders are water cooled. A maximum pressure of 60 lb is used on the Transmat equipment. Cycles of operation of all four presses in each of the two lines are tied into the Transmat control. A schematic plan view of the four presses, Fig. 1, shows the position of the Transmat equipment. The small cross section, right, shows the position of the forgings in regard to the transfer track and the gripping fingers. The shells always rest on the track when moving from one station to the next. The stations are spaced 72 in. apart. The other small detail drawing, at the left, is a plan view of the fingers showing how the shell is gripped. After the fingers convey the shell to each operating station they retract and return to their starting position.

More details will appear later on the Transmat equipment as the key controlling station of the whole line is located on the delivery side of the second press. The press line was first started up without installing the Transmat equipment, see Fig. 2. A few months later the Transmat equipment was added as shown in Fig. 3.

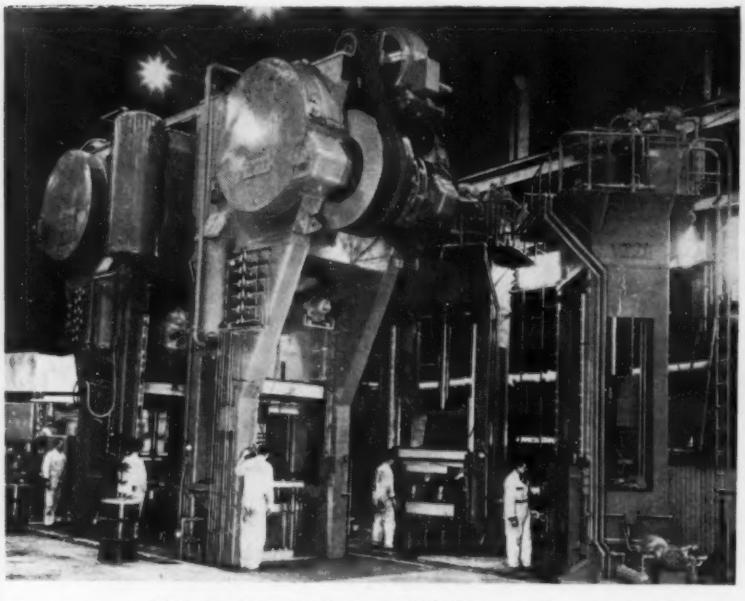

FIG. 2—One of the two shell lines at General American Transportation Corp. in East Chicago, Ill.

FIG. 3—Same presses as shown in Fig. 2 with Transmat equipment installed.

Three calibers of artillery shells are being produced: 90 mm, 105 mm and 120 mm. All stock is purchased as hot-rolled, round-cornered squares in the three sizes shown in Table I. The average multiple wt length and steel analysis for each type of shell also appears in Table I.

Labor saving devices and speed processing, typical of the entire plant, start with the bar cutoff operation. Gas cutting torches are used to nick the mill length bars which are fed into the press and broken off in the multiple weights needed. Weight variations of these multiples vary not more than 1¼ pct from the average billet weight shown in the table. The nicked billets are broken into multiple slugs on a Verson 500-ton eccentric press at the rate of 12 pieces per min. Round corner squares, up to 4x4 in., have been successfully run through this single point suspension tie-rod type of press shown in Fig. 4. The press is gear driven by a 40 hp motor.

Considerable time and steel are saved through nick and break methods. The best cold sawing time for a 3½-in. sq is 1 min from start of cut, to start of next cut. When using the 22½ diam saw blade which is ¼ in. wide, waste is encountered with each cut. Based on a thousand shells from 3½ in. bars, 875 lb of metal for every 1000 shells is wasted as chips in cold sawing, compared to the nick and break method. Also there is no problem of chip disposal with the latter method.

The fractured ends of the billets are straight enough to permit them to be charged on end in the 25-ft diam rotary hearth heating furnaces. These circular forging furnaces built by Jet Combustion Corp., Chicago, receive and discharge the slugs from the single platform. The furnace, Fig. 5, can be fired with oil or gas and is capable of heating 300, 120 mm billets per hr to forging temperature. The heating cycle from charge to discharge ranges from 45 min to 1 hr, 5 min depending on billet size, with the discharge temperature ranging from 2200°F to 2300°F.

The heated slugs are discharged on to a short drag chain conveyer which transports them through the descaling machine. Each slug is held at 45° through the descaler. The descaler is equipped with three high pressure water sprays operating at 1500 psi. Two of the sprays clean the four sides and one end of the billet while the third impinges on the front end of the billet. Upon discharge from the descaler, the billet enters the discharge chute shown in Fig. 6, is discharged vertically and is picked up by the automatic transfer fingers and transferred to the working station of the first press. As the billet centers over the die pot the forward motion of the transfer table stops, the fingers retract and the billet drops into the die pot.

All operations of the four presses including ram travel, ejection of the forging, shuttling of the punches, die lubrication, die clean-out, stripping and transfer from one press to the

TABLE I

FORGING SLUG SPECIFICATIONS

Shell	Bar Size R. C. S.	Avg. mul. wt.	Avg. Length	Steel Grade
90 mm	3 x 3 in.	27½ lb.	11½ in.	1040
105 mm	3½ x 3½ in.	37 lb.	11 in.	1040
120 mm	4 x 4 in.	85 lb.	14¾ in.	1065

FIG. 4—Broken billet slugs slide down to conveyer which delivers the billets to the front of the heating furnace.

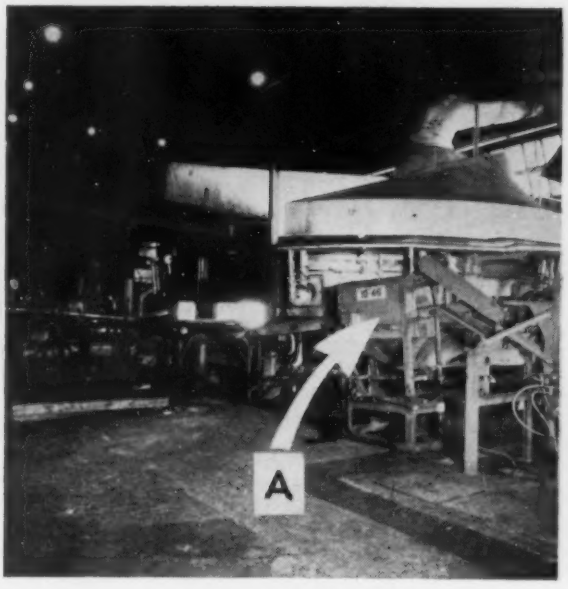

FIG. 5—Furnace delivers the heated billets to a conveyer which delivers them to the descaler (A).

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Hydraulic bolster is the secret—

FIG. 6—Hot billet now scale free about to drop into discharge chute. The vertical bar in the bottom of the chute lowers the billet to transfer table where fingers will engage it.

other are automatically controlled from here until the finished hot extruded shell rolls on to the conveyer located under the two, push-through presses. From furnace to the conveyer line the shells are not touched or manipulated by hand. The Transmat transfer equipment automatically does all the labor. Another feature of this shop is all grease for all presses is supplied from one central lubrication system.

All punches and dies used on all the presses are water cooled. Each press is equipped with two identical punches, which alternate in the die as shown in Fig. 7. As one punch descends into the die cavity, the other is submerged in the cooling water tanks located on either side of the die pot. Each punch is also internally cooled by forced water through a center cooling passage. Punch temperatures are kept between 500 to 600°F by this dual cooling method. The die is internally cooled as can be seen in the schematic drawing, Fig. 7. Die temperatures are held to 200 to 400°F. Control of punch and die temperature prolongs their useful life between redressings and in the case of the die greatly aids lubrication. The lubricating oils will not wet and spread over the die surface if the surface of the die exceeds 400°F in temperature.

As the heated billet is released by the transfer fingers and drops into the die cavity of the first press, the ram descends, the form end of the punch is sprayed with a graphite compound as the punch passes the lubrication ring. All punch and die lubrication is actuated by the press cycle and is automatic. The punch presses the slug down into the die. As the billet reaches bottom the internal depression is formed in the top of the billet; the billet is formed into the die cavity diameter and the base is pressed into the lower die cavity forming the centering pip. The billet usually fills out the main die area cross section and comes out round.

Major features of mechanical presses such as a given stroke and predetermined shut height preclude closed die forging unless relief is provided. To permit closed die forging these Verson presses are equipped with a hydraulic safety bolster which recedes under a preset tonnage providing this necessary relief. When the safety is forced down because of too much metal in the die cavity, the forging merely elongates with all other dimensions remaining constant.

Bolster is adjustable

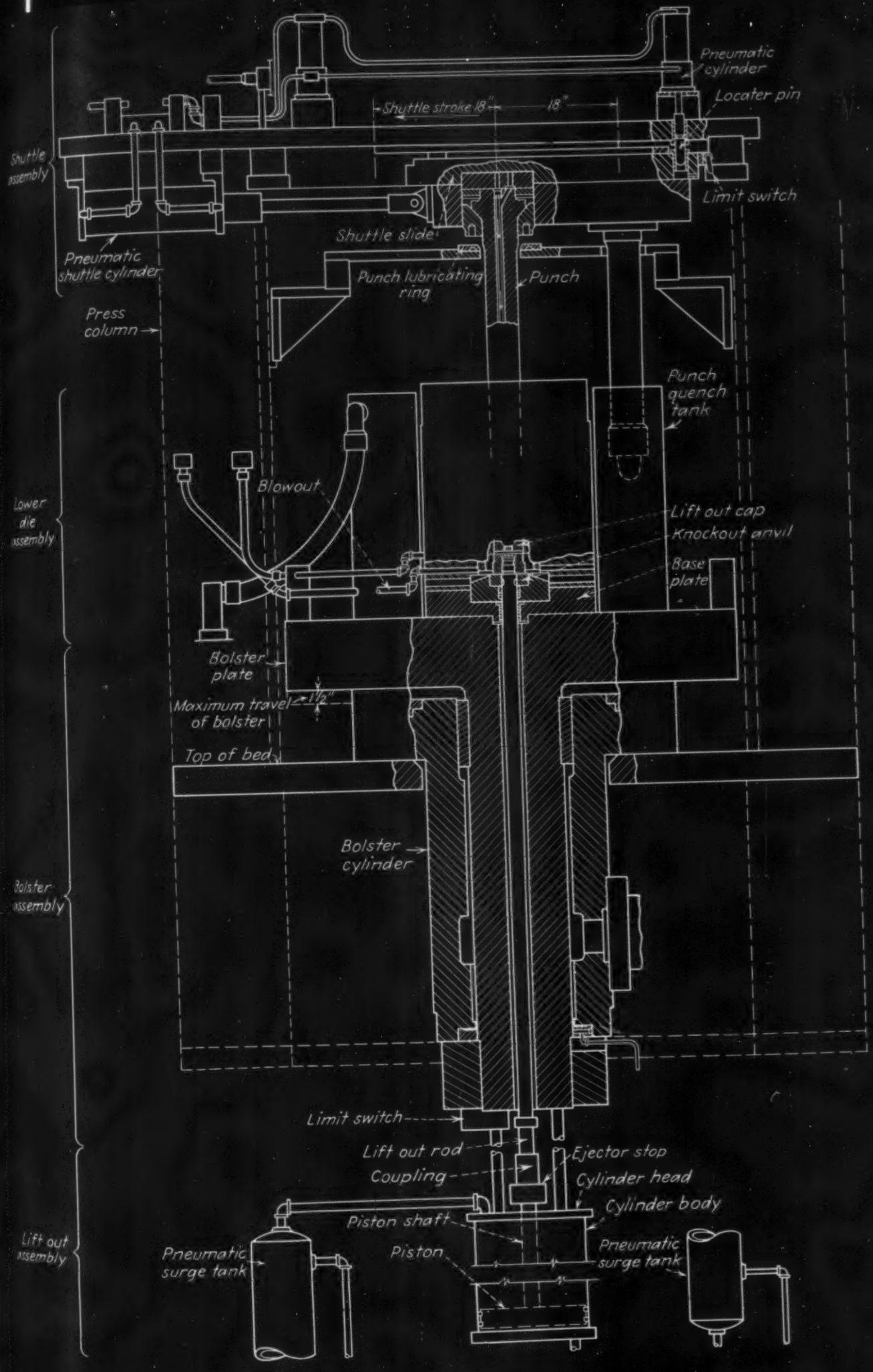
The safety bolster ram schematically shown in the lower part of Fig. 7 has a capacity of 800 tons in the upward direction and this pressure can be adjusted to suit the size of each type of shell. The safety bolster operates on each stroke depending on the amount of excess metal in any given billet. The shoulder of the punch which prevents upward displacement of metal produces a square flat periphery at the top and insures an even seating and filling of the centering pip and produces concentric forgings. Forgings produced to date at General American show a total eccentricity of 0.015 in. At the bottom of the punch stroke the ejector is energized and starts back up with the punch. A combination of hydraulic and air pressure of 35 tons pushes the ejector upward for the first 6 in. where an air cylinder exerting 10 tons takes over and ejects the forging to the feed level. The weight of the formed piece automatically strips the sized slug from the punch.

Shuttle cycle is automatic

The punch continues on up clearing the lubrication ring and as it does the shuttle cycle is automatically actuated. The shuttle is air driven and a schematic cross section of the shuttle appears at the top of Fig. 7. Steel pins hold the shuttle locked in position once the crosslead member has moved over to alternate the use of the two punches. Simultaneous with the shuttle movement and just as the knockout pin starts to retract downward a 100 lb air and steam blast entering at the bottom of the die clears the cavity of scale, insuring a clean surface between the knockout and the die bottom.

As the partially formed or sized slug is

FIG. 7—Cross section of the Verson mechanical cabbaging press dies. Forging is shown in black in the die with the punch in the bottom position. Safety bolster and lift out assemblies detailed at bottom of drawing. Note water-cooled die pot and punch. Quench tanks for punches are on either side of die pot. Shuttle moves back and forth so they are used alternately. Locater pins on shuttle slide prevents shuttle movement until punches retract to proper position.



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Hot extruding is second operation—

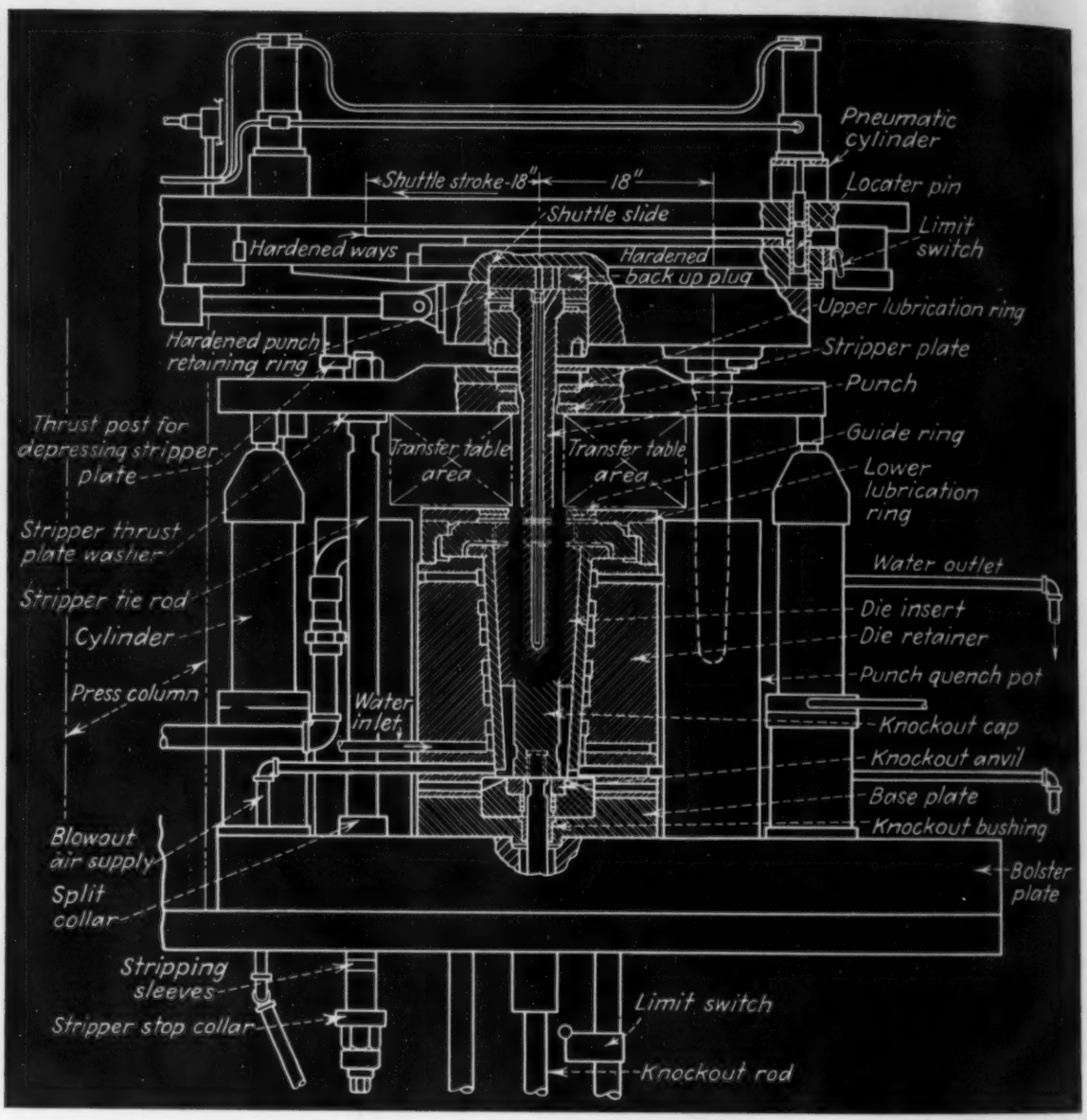


FIG. 8—Cross section of Verson mechanical extrusion press dies. The shoulder of forging is not restrained. Transfer table does not extend over die pot, see Fig. 2. Completed forging shown in black, press at bottom of its stroke. Note stripper plate above transfer table is tied by rods to stop collar at bottom of drawing.

ejected from the die of the first press the transfer fingers grab it and move it to the next press where it is placed into the opening of the extrusion die and is held upright by the shoulder at the top of the preformed billet. As the punch descends, the first work at this station is performed by the die wiping up the bell mouth at the top of the forging. The forging then bottoms and complete filling and sizing of boat tail and base thickness take place as shown in Fig. 8. Excess metal is backward extruded toward the top of the punch which in this case has no shoulder.

The top edge of the extrusion formed by the punch shoulder in the first operation is slightly cooler and stronger than the rest of the shell body. Subsequent extrusion, therefore, does not effect concentricity at the top edge so that earing is precluded. The extrusion press is not equipped with a safety bolster because the work piece is not restricted as it was in the first operation. The ejection of the extruded piece is identical as on the first press as is die cavity blowout and punch and die lubrication.

A stripper is used on this press, however, as the extrusion clings to the punch. The stripping plate is separately guided and is depressed with ram contact on the down stroke. The stripper

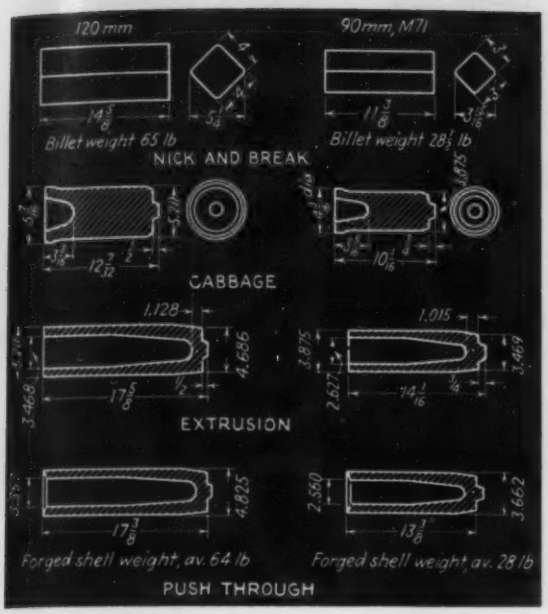


FIG. 9—Billet and forging contours for each step in the manufacture of two of the three different size shells.

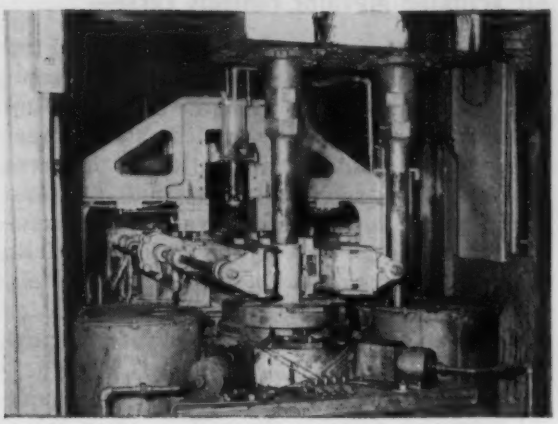
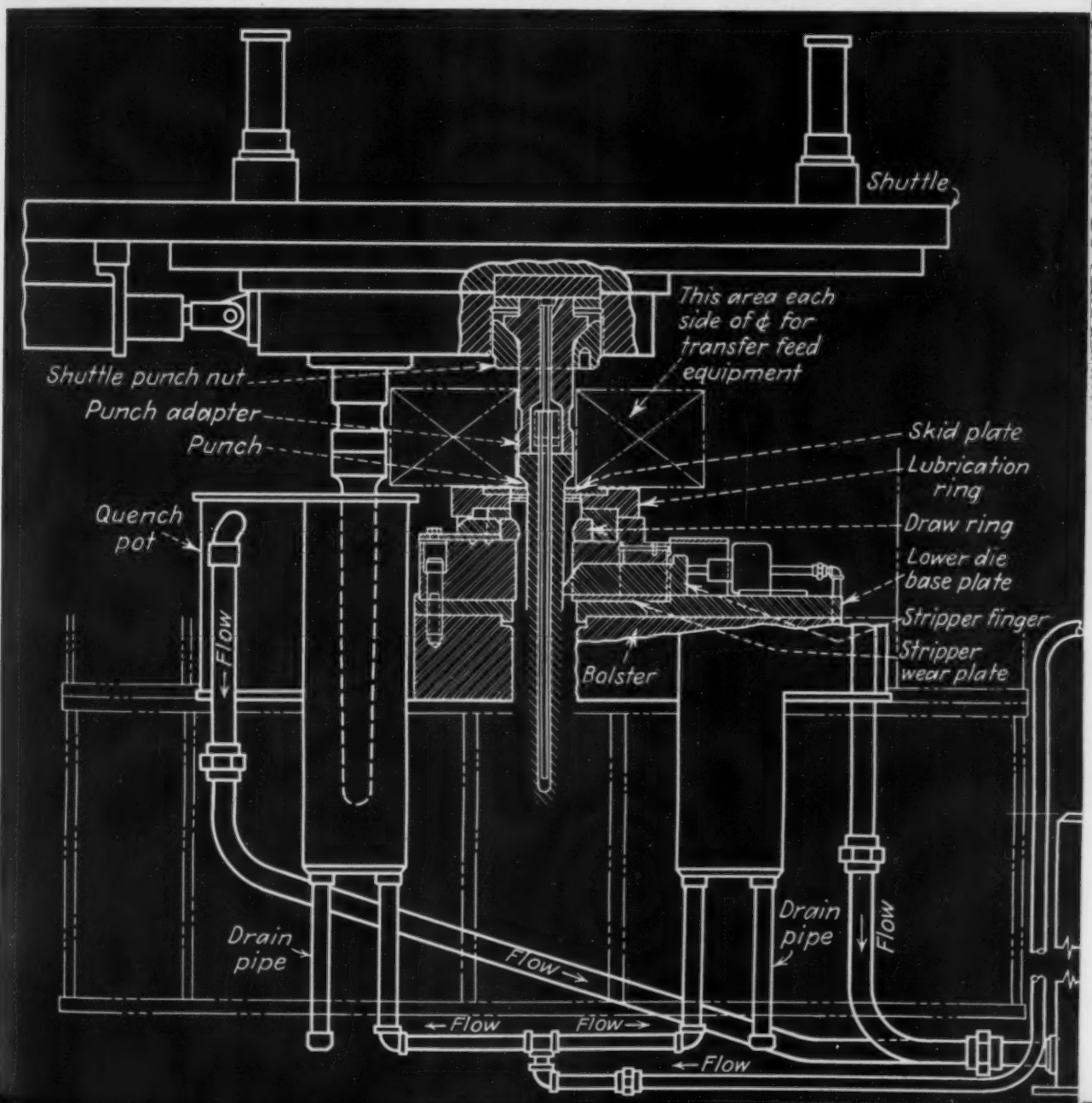


FIG. 10—Push through press, descending ram will push the forging shown in the center through the die and down onto the conveyer located beneath the press. The other punch is descending into the lubrication tank.

FIG. 11—Cross section of the Verson hydraulic push-through press dies. Only one of the four stripper fingers is shown. Fingers are pushed aside by forging on down stroke. Pneumatic air cushion pushes fingers into stripping position after the work has passed.



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Air actuated elevator controls cycle—

also follows the ram on the up stroke until top position is reached. This return action is accomplished pneumatically by two air cylinders. Top or stripping position is restricted on the retraction stroke by collars at the bottom of the press housing. The punch must then pull past the stripper plate and in so doing strips the extrusion from the punch. The stripped shell falls down into centering cavity of the knockout pin and remains upright as the automatic transfer fingers engage the shell and move it to the next operation.

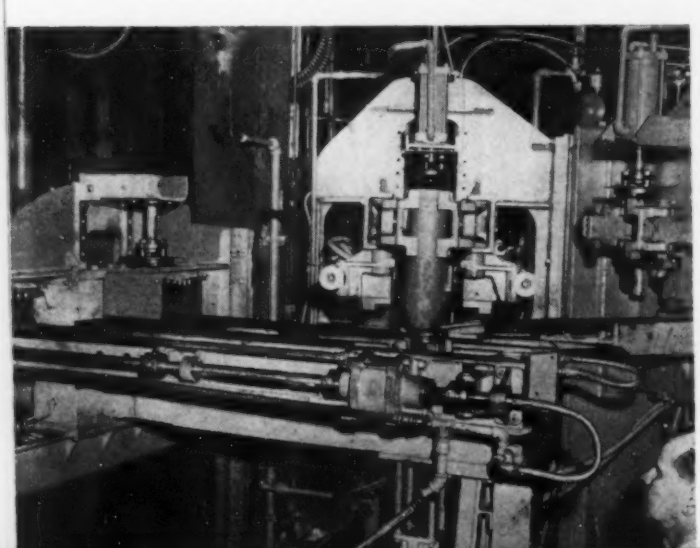
The stroke of slide on the 1000-ton mechanical extrusion press is 40 in. This press has a drawing speed at mid stroke of 89 fpm. This is a double geared eccentric press equipped with a 200 hp 1200 rpm motor.

The shell body at this point has the shape shown in Fig. 9, line C. The actual dimensions depend on which size shell is being made. The boat tail and base thickness are sized. The cavity is formed and the radius at the bottom of the inside cavity is finished. The only unfinished portions of the shell are the inside diameter of the cavity wall thickness and final length, all of which are finally sized on the push-through presses shown in Fig. 11.

The schematic drawing in Fig. 11 shows the

FIG. 12—Finished forging, now a rough shell falls onto conveyer below the push-through press and is taken to controlled cooling cycle on another conveyer line.

FIG. 13—Top of elevator stroke shows shell still supported by elevator pad with the fingers having just closed. Elevator will return to starting position and on next cycle will deliver the shell to the other transfer table fingers shown at the extreme right. Idler tables are coordinated with elevator.



punch and die setup used for push through. The shuttle arrangement and internal cooling are identical. However, a special cooling and lubricating solution is used in the punch cooling tanks on either side of the die pot. The punch is dipped into this solution by the shuttle which coats the punch with graphite before each stroke. A Verson 100-ton single action hydraulic press is used for push through as shown in Fig. 10.

After the punch has completely pushed the shell through the die it retracks on a fast return of 570 ipm. The gross lifting capacity on the punch return stroke is 35 tons. The four stripper fingers, one of which is shown in Fig. 11, engage the top of the shell and strip the shell from the punch. The forged shell falls by gravity onto a conveyer below the press shown in Fig. 12, and is conveyed to the other end of the shop where cold nosing, heat treating and machining are performed. The entire cycle from the furnace to finished shell takes but 2 min, 20 sec.

Shells control cooled

The shell is taken by the conveyer, shown in Fig. 12, to a controlled cooling conveyer. The shells are control cooled through the critical range and then on down to room temperature. This cooling cycle produces a forging of proper hardness, of 223 Bhn, max, for subsequent machining and cold nosing. Shells come out of the controlled cooling zone, are elevated to overhead conveyer and delivered to storage area cool enough to unload by hand.

When the shell line was first started the transfer of work from one press to the next was done by hand. After installation of the automatic transfer equipment the average production of shells was doubled and may increase as more experience is gained in further production.

All four presses are tied into the Transmat control circuit. The key or master control switch is located at the elevator station, see Fig. 1. The entire press line cycle is actuated by the elevator fingers which strike a limit switch when the fingers of the elevator come to the position shown in Fig. 13. The elevator shown just below the forging lifts the shell up to the two idler tables, one going to each push-through press, and returns down to the die pot level as shown in Fig. 14. This air powered cycle takes less than a second.

The moment the elevator reaches top travel shown in Fig. 13 the rams on the mechanical presses start down, all fingers on transfer tables for the first two presses go back to receiving position. The two idler tables work in conjunction with the elevator station also but the sequence is somewhat different. As the elevator reaches top position the fingers of the idler table grab the shell as shown in Fig. 14. As there are two idler tables they alternate in

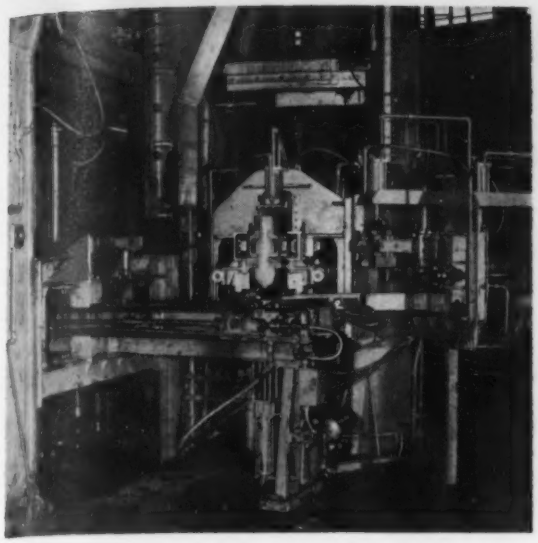


FIG. 14—Elevator has raised the shell to the level of the idler station transfer tables. Fingers have engaged shell and elevator pad has returned down to starting position. The press at the left is the exit side of the extrusion press while the top of one of the push through presses can be seen top center. The transfer idler table at the right leads to the other push-through press.

receiving shells from the elevator. As the fingers grip the shell all stations of the idler table advance which drops a shell into the die pot of the push-through press. All presses go through their complete cycle whether a forging has been delivered or not.

The Transmat equipment on the mechanical presses, pierce and extrusion is built so that each set of fingers for each press has individual clamping and unclamping action which is controlled by the ram position of each of these two presses. These fingers convey the shell over the die pots, the fingers retract as the rams start down and the fingers move quickly back to their starting position, where the cycle starts over.

The lift out mechanism of the presses always brings the forgings back up to feed level where the fingers clamp the shell and move it onto the transfer track. This is the only time in the whole line that the shells are unsupported either by the track, the die pot, the elevator pad, or top hold down pads of the idler tables.

The master control board man runs the entire line from furnace to conveyer and can stop the whole line with a single button.

NEW BOOKS

"Personal Administration," by William W. Waite. Fundamental philosophies of personnel administration as evolved during the past half century, and their relation to present practice are restated here. Theme of the book is America's demonstrated ability to solve complex problems of employing, training and administering the labor force by common sense, adaptability and a growing understanding of human relations. The Ronald Press Co., 15 East 26th St., New York 10, N. Y., $7.00. 683 p.

"Planning and Developing the Company Organization Structure," by Ernest Dale. Dissatisfaction among both top and middle management with their organization structure and operation was evidenced when Mr. Dale made his survey of close to 200 of the nation's top business organizations. Trends noted in the AMA survey indicate that by 1975 the headquarters of large corporations may evolve into management companies assisting groups of manufacturers and distributors with advice in decision making. American Management Assn., 330 West 42nd Street, New York 36, N. Y. $4.50. 32 p.

"Brtish Planning and Nationalization," by Ben W. Lewis. Selected areas in which the Labor government of Great Britain has undertaken to control the economic life of the nation are explored. Mr. Lewis concludes that, irrespective of party or government, large-scale nationalization and peace-time planning are almost certain to be continued as integral features of the British economy. The Twentieth Century Fund, 330 West 42nd St., New York 36, N. Y. $3.00. 313 p.

"Forging and Forming Metals," by S. E. Rusinoff. Rapid developments in forging technique have brought to light the need for a new, more complete text. Impact, press, and upset forging, extrusion, heat treatment of forgings, cleaning and finishing, inspection, safety in the forge shop, designing, and selection of metals are a few of the subjects discussed. American Technical Society, Drexel Avenue at 58th St., Chicago 37. $3.95. 279 p.

"Selling to Industry," by Bernard Lester. A compact, pocket-size manual gives practical ideas and suggestions for the sales engineer who wants to analyze and improve his methods of finding and selling industrial customers. Keynote of Mr. Lester's book is that selling is not a haphazard affair. Proper preparation and orderly enthusiastic procedure are necessary. The Industrial Press, 148 Lafayette St., New York 13, N. Y. $3.50. 255 p.

"Electrical Reference, 2nd Edition," by E. S. Lincoln. This new edition of a widely acclaimed reference book presents descriptions, ratings, data on electrical equipment. Electrical Modernization Bureau, Inc., 110 Mamaroneck Ave., White Plains, N. Y. $25.00. 1744 p.

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Fairless will be fastest—

TIGHT MOTOR DESIGN powers fastest cold mill

By Bruce D. Mickey
Large Motor & Generating Engineering
General Electric Co.
Schenectady, N. Y.

The 5-stand cold mill being installed at the Fairless Works of U. S. Steel Co. will have a delivery speed of 7000 fpm. Successful commutation at high over-loads has necessitated the use of a 6-unit motor on the 5th stand of this mill. Ventilating difficulties encountered in the use of small diameter rotors which were required to reduce stored energy to a minimum have been overcome. Circular rotor punchings are mounted directly on the shaft arms giving maximum ventilation for a minimum of space.

The United States Steel Co. is now installing a 5-stand tandem cold mill at its new Fairless Works, Morrisville, Pa. The driving motors, motor-generator sets, and their control equipment are being furnished by the General Electric Co.

A brief look at the past 15 years shows that enormous strides have been made in operating practice. Even the brief listing of a few typical mills in Table I bears this out. It is especially true as to delivery speeds. The years listed in the table are those in which orders were placed for the electrical equipment, and not the dates on which the mills were placed in service.

Mill 4 is the Jones & Laughlin Steel Corp. mill at Aliquippa. Up to the present time, this mill has the highest speed of any mill in operation. It was necessary on this mill to use four motors on one stand in order to meet stored energy and space requirements. The drive for the last stand is a 4000 hp, 4-unit, twin. Each unit rated 1000 hp, 275/535 rpm, 750v. This mill has been successfully operated at a delivery speed of 6250 fpm.

Mill 5 in Table 1 is the new mill at the United States Steel Co.'s Fairless Works. As mill speeds and motor horsepower have increased, the design of the driving motors has become more and more difficult. Machines must successfully commutate the increasing loads. At the same time, they must have stored energy values for motor and mill sufficiently low and well-matched to allow acceleration and deceleration at the high rates required. A detailed list of the stand motors for the Fairless mill appears in Table II.

Stand 4 required a four-unit twin drive—two double-armature motors similar to the last stand on the Aliquippa mill. Stand 5 had to be driven

TABLE I

MILL POWER UNITS—15 YEARS OF CHANGE

Mill Number	Year	Number of stands	Total horsepower in main stand motors	Delivery speed, fpm
1	1936	5	5500	1570
2	1939	4	6700	2486
3	1940	5	10,800	3850
4	1945	5	16,280	6000
5	1950	5	20,250	7000

TABLE II

FIVE-STAND TANDEM COLD MILL AT FAIRLESS

Stand	Total hp	Motor rpm	No. of units	Load capacity, pct, 1 min.
1	1750	110/310	Single unit	200
2	3500	168/420	Double unit	200
3	4500	200/415	2 single-unit twin	200
4	4500	300/625	4 double-unit twin	225
5	6000	345/635	6 triple-unit twin	250

by a six-unit twin—two triple-armature motors. This was required to meet requirements of space, stored energy, and commutating ability.

The motors for stand 4 and 5 had to be designed to handle higher than the standard 100 pct overload momentary rating. Fig. 1 shows the six-unit motor for stand 5 on the test floor. The two halves of the base were separated to make it possible to work on the two triple units independently.

All motors were designed with the smallest possible rotor diameters consistent with good commutating ability. This was done to reduce stored energy to the lowest practical value. Because of the difficulty of ventilating such small-diameter, long-stacking motors, it is sometimes necessary to build machines with circular, one-piece rotor punchings. Normal design and production practice would dictate the use of segmental punchings.

Special precautions were taken in the design and construction of commutators and in the progressive assembly and joining of the rotor elements. This was to prevent shifting of the rotor parts during the periods of frequent and rapid acceleration and deceleration. The various details are similar to those used for many years in motors for reversing blooming mill service.

On the smaller diameter units for stands 4 and 5, where ventilating space was at a premium, the rotor punchings were mounted directly on shaft arms. The shaft was formed from a solid steel forging with the metal between the arms being milled out. This construction gives maximum strength and minimum shaft deflection with the least amount of material. Because the rotor punchings are circular and not segmental, maximum space is available for passage of ventilating air.

Where any given motor had two or three units in mechanical tandem, its rotors were all made duplicate and interchangeable. This was accom-

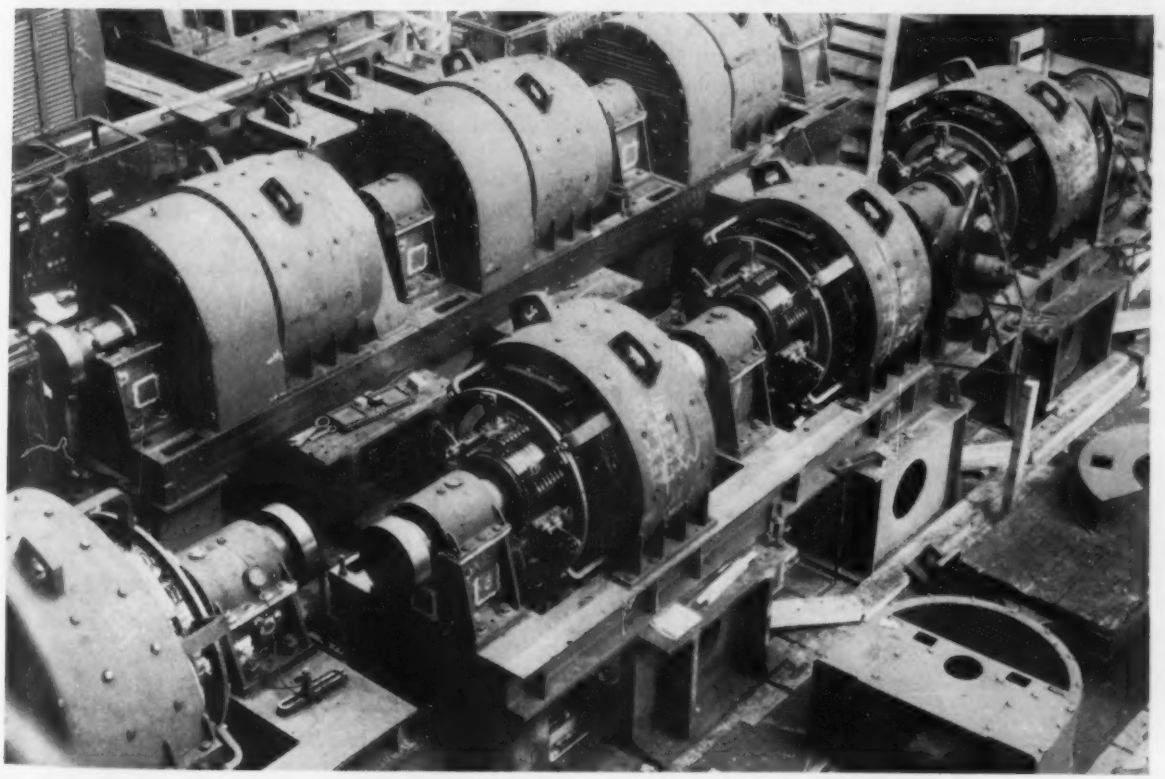

FIG. 1—This is the six-unit motor for stand 5 of the Fairless Works' 5-stand tandem cold mill, undergoing tests. The half of the base nearest camera shows motors without air shields. At rear, second half is assembled.

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Use lowest possible stored energy—

plished by the use of a "stub" shaft through the mill-end bearing and a coupling on the back end of each rotor. Tachometer generator drives and speed limit switches were mounted on the stub shaft so that they will always be in service even though one of the units might be out for repairs.

Disc-lubricated bearings were used in the stand motors. Fig. 2 shows a cross-section drawing of a bearing and pedestal of this type with parts labelled to show their functions. Where a thrust bearing is not required, the thrust plate between the oil disc and the oil seal is omitted. This type of lubrication is much more reliable than oil rings, especially on low-speed machines. This is also true on machines subject to frequent starting and stopping, as with a tandem cold mill.

Mica and glass insulation

Class B insulation was used on motor rotors and motor stators. On the rotors, this included mica and glass insulation on the coils, on the flange rings supporting the end windings and under the binding bands. Tie clips on the binding bands were brazed. Asbestos textolite slot wedges were used. On the stators, main and commutating field coils were insulated with combinations of mica and glass in suitable forms. All parts were thoroughly varnish-treated to make them moisture-resistant.

In the tandem motors on stands 2, 4 and 5, the units mechanically connected together were equipped with double opposing series fields to insure proper load balance. Of course, in a twin drive, the independent units for driving the top and bottom rolls cannot use this simple means for balancing the loads. This has to be accomplished through the control circuits.

Motors for any mill of this type are designed for operation with forced ventilation only, to get the lowest possible stored energy. Since the motors for this mill are not in a motor room, it was necessary to design the covers so that air could be blown from the pits into the coupling ends of the motors. The air is then discharged into the mill through louvered openings in the commutator end covers. In the coupling-end air shields, quick opening cover plates were provided for inspection and blowing out the machines.

Inspection windows provided

In the commutator end covers, in addition to the outlet louvers, inspection windows were provided. Also, provision was made for easy access to the commutators for inspection and servicing of the brushes. On the tightly spaced multiple-unit twin drives for stands 4 and 5, this was accomplished by so arranging the covers that the entire front face could be removed. The arched side and top members remain in place. On the other motors, the whole corner sections were hinged, so that a lare part of the ends and sides of the covers could be swung out of the way.

Proper operation of such a mill, where acceleration occurs at a high rate with the metal under tension between stands, requires particular attention to speed regulation of the driving motors. Speed regulation of a dc motor, assuming constant voltage at the power supply, depends upon two opposing effects. One is the IR drop in the armature circuit. This gives the motor a dropping speed characteristic when load

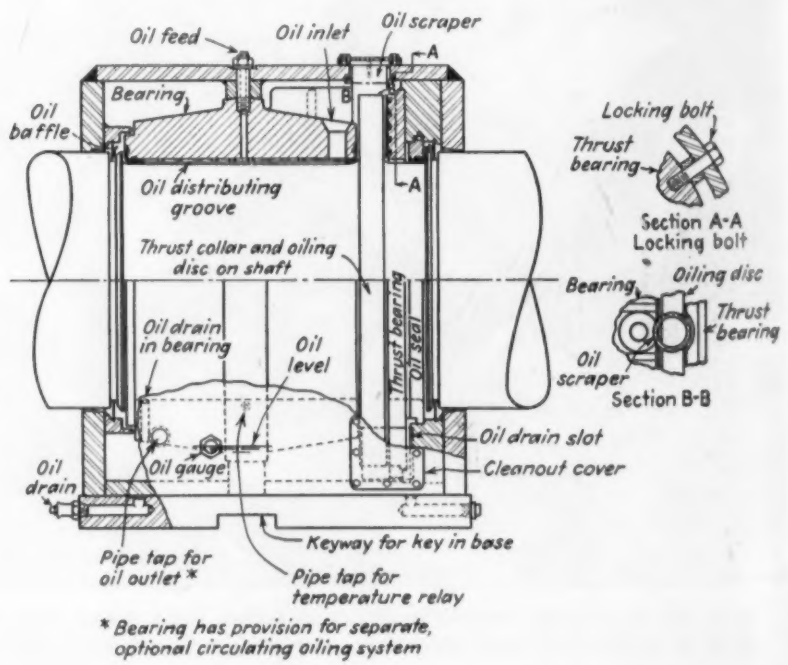

FIG. 2—Cross-sectional drawing of bearing and pedestal of the type used in cold mill motor.

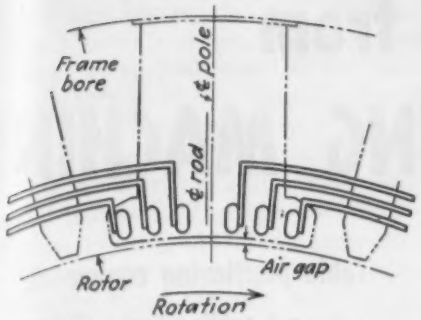

FIG. 3—How pole face winding is offset to provide for cumulative compounding, overcoming demagnetization effect of armature reaction, as applied in new mill motors.

is applied. The other is the demagnetizing effect of the rotor current, which in turn is affected by brush position. This gives the motor a rising speed characteristic when load is increased.

As motors in this class are usually working extremely hard on commutation, brush position and commutating field strength have to be adjusted to give the very best commutation performance. They cannot be used to help adjust speed regulation.

To get the best results, the two major factors affecting regulation have to be corrected independently. The IR drop correction can be accomplished in several ways. Some of these are generator design, control elements and line booster generators. They will not be discussed here. The more troublesome factor is the demagnetizing effect of the armature reaction.

Demagnetizing problem solved

This effect comes from the rotor. And since ordinary series fields high up on the main poles have entirely different leakage factors, the correction should be applied as close as possible to the seat of the trouble.

The General Electric Co. has overcome this demagnetization by offsetting the rods comprising the pole face winding, Fig. 3. The whole pole face winding is rotated very slightly against motor rotation, from symmetrical position on the main poles. It thus compounds the main poles in the cumulative direction. Naturally, this feature was incorporated in the new motors for the Fairless Works.

Complete and exact compensation cannot be made without using a very light adjusting field of some description. The effect of brush shift cannot be predicted. With the increasing speeds and the increasing amounts of power being transmitted through one coupling, a brand new problem has recently arisen in the design of dc rolling mill motors. This problem did not occur in the motors for the present mill. It did come up on another mill of this general class for which the motors are now under construction.

On a dc mill motor, the diameter of the mill-end bearing is always fixed by the torque to be transmitted. On a double-unit, three-bearing motor, the size of the middle bearing is usually governed both by torque and a rather heavy pressure load due to its location. On a triple-unit motor, the inside bearing nearest the mill has to carry two-thirds of the total working torque and must therefore be of relatively large diameter.

It also has imposed on it a heavy pressure load because of its location in the train. As powers and speeds go up and as more units are strung out in tandem, journal velocities and bearing pressures are now reaching a point where bearing losses can no longer be dissipated by self-cooling. The motor must depend on some form of external cooling for the bearing, either water-cooling coils or circulating oil.

Generators must be matched

This is so radical a departure from the old idea of the reliable self-contained dc "cart-horse" motor that it deserves the attention of mill engineers in planning new and faster installations.

On this mill, each stand is driven by its own generator or generators. It is not in the scope of this article to describe these machines in any detail, but just to call attention to a few important factors influencing the machine design.

On such a mill, the metal is entered at low, or threading, speed under tension between stands. The mill is then accelerated to running speed very rapidly and the tensions must not be unduly upset during this period. This calls for more than the special speed regulation methods described above. It also involves a number of electrical problems in generator design, especially when the generators are not all of one size. These conditions are as follows: (1) All generators must have similar saturation curves; (2) all generators must have the same voltage regulation at a given percentage load; (3) all generators must have low residual voltage so that operation at threading voltage will parallel that at accelerating and running voltages.

Special winding increases hp

The generators were carefully designed and then adjusted in test to fulfill these conditions.

The General Electric Co. has already built ten motors with a special type of rotor winding which increases the amount of horsepower which can be carried on a given rotor diameter. This reduces the number of motor units required to power a given stand. Nine of these have been in successful operation for a considerable period of time, and the tenth has just recently been installed on an old mill. An eleventh such unit is now being constructed for use on a 42-in. reversing cold mill.

A great deal of study and experimentation has been involved in perfecting this type of winding. It is hoped that continued success with it will enable the electrical designer to avoid increasing the number of motor units required for an individual drive.

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How to get the most from MILLING MACHINES

Table positioning equipment, pre-set cutting tools, tilting heads, slotting attachments.

By John E. Hyler
John E. Hyler & Associates
Peoria, Ill.

Third of a series

Table positioning equipment enables a plain milling machine to handle some work otherwise requiring a jig borer or grinder. Pre-set cutters slash tool change time. Tilting heads save setup time. Slotting attachments greatly increase versatility of ordinary milling machines and aid the toolmaker.

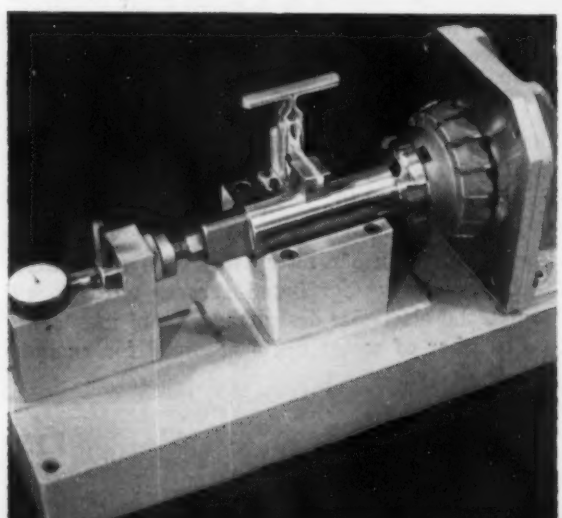
It is not unusual to see turret-type stops used on lathe setups. They can also be used on a vertical milling machine. A dial indicator is often employed in connection with such a stop. One turret stop has been provided with four stop screws, each independently adjustable, allowing four different depths of cut to be accurately gaged in one handling of the work. The turret is indexed by hand.

In various cases, a knee-type milling machine may be equipped with a micrometer table setting attachment, for spacing and boring operations. A machine so equipped is often a valuable addition to the toolroom where the work does not justify installation of a jig borer. It is also useful in relieving occasional overloads on the jig borer.

The function of such an attachment is to facilitate positioning of the milling machine table to close limits. It also provides a ready means of compensating for errors found when checking work position before finish boring. One such attachment has 12 measuring rods, from 1 to 12 in. in length, with a micrometer head for making adjustments of fractions of an inch. Two brackets are finished, for longitudinal and transverse adjustments.

There is precise measuring equipment meant not only for cross and longitudinal movements, but for vertical movements also. V-blocks hold measuring rods and micrometer, which are placed between the adjustable stop and the dial indicator. Such equipment may be used in one direction only, in two directions, or in all three. In addi-

PRESETTING of composite face milling cutters is done in fixtures like this. Quick change of cutters is possible since cutter length is set within 0.0005 in. with dial indicator before cutter is installed on machine.



SPECIAL milling machine has five spindles, arranged radially, for making staking notches in 75 mm shells. Fixture and head adjustments can be made to accommodate shells of various other calibers, also for milling staking notches.

tion, it may be provided for any combination.

In boring a series of holes, a casting or other piece of work is so positioned on the machine table that the spindle lines up with the first hole. A sufficient number of measuring rods and the micrometer are placed in the provided V-block, to fill up the space between the adjustable stop and the dial indicator. The micrometer and the stop are then adjusted until both indicator dial and micrometer have a zero reading.

To accurately locate the next hole, the necessary rods are removed or added to make up the even inches. The micrometer is then used to take care of the fraction of the inch corresponding to hole-center distance. The table is then adjusted until the indicator again reads zero.

Undercutting attachments are used to extend the range of a milling machine in reference to large diameters of spur and spiral gears. These attachments allow the milling cutter to pass beneath the large-diameter work. They make use of two raising blocks for the work mounting, plus a special type of support for the outer end of the milling machine arbor.

There are some ideas not now available for standard milling machines. However, they have much promise for the future.

Milling cutters may be preset

A new cutter-driving device makes possible the pre-setting of many types of milling cutters, especially for face milling. It features quick changing of composite cutters. Composite cutter setups can be changed in less than a minute, which makes for very great time saving on production work. The worn or dull cutter is removed by simply sliding it out of the spindle after first loosening a large lock nut. A new preset cutter is then inserted in the spindle and the lock nut is quickly tightened.

Much lost time is eliminated with this type of cutter layout, because adjustments may be made while the machine is running. There is no need for trial cuts in the machine, because cutter length is pre-set to a dial indicator reading within 0.0005 in. A master length gage is supplied with the fixture, to establish the limits on the indicator. A large square section at the end of the tool shank makes the drive absolutely positive, and an adjusting screw takes the thrust solidly against hole bottom and spindle.

An interesting departure from indexing work for making repetitive radial cuts is use of a number of radially disposed milling cutters, arranged equaliy distant from a given center, and uniformly spaced. One example is a hydraulic milling machine arranged with a five-spindle head, and with a suitable fixture for milling five staking notches in 75 mm shells.

Used for different size shells

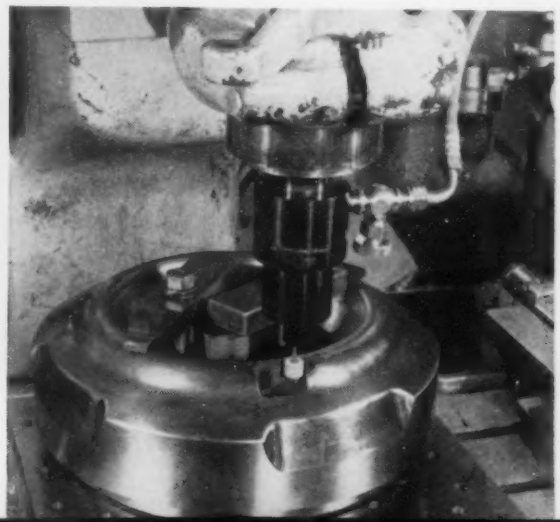
By using a different fixture and making slight alterations in the head, the same setup can be used for milling notches in 90 mm, 105 mm, and 120 mm shells. Using a setup of this kind, the operator places the part in the fixture and engages the table feed. The table or part will make rapid advance to the cutters, then advance at feed speed for proper distance to mill all five notches at once. The table will then reverse, and return to the loading position in rapid traverse.

There are some vertical millers with direct motor drive on which the milling head may be tilted. One place where such an arrangement has practical use is on a vertical milling machine of duplicating type, where it may prove desirable to use end milling cutters for machining deep straight walls or for slight undercutting. Certain duplicator-type millers are provided with a tilting adjustment for the head, by means of which the cutter may be swung away.

Many different cutter arrangements are possible on standard machines which greatly add to versatility, and in many instances greatly speed production. Special collet chucks can be used directly in the milling machine spindle, including drilling hucks, boring chucks, and others. Some of these are mounted in quick-change holders. Often, the setup consists of a master holder together with several adapters designed to hold

DUPLICATOR milling machine having tilting adjustment on head. This feature enables operator to mill straight walls of considerable depth, or slight undercuts. Tilting attachments can be added to standard milling machines, too.

HIGH-SPEED air-driven grinding head applied to milling machine. In this application, an abrasive wheel is used to grind insert pockets in dies. Burrs can also be used. High speeds are necessary to keep sfpm high enough.



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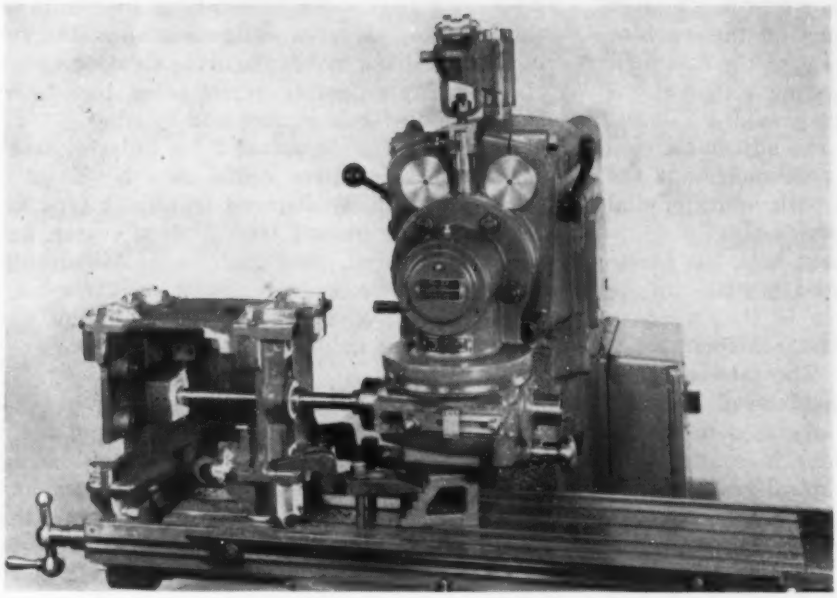


UNIVERSAL milling attachment can be used with spindle horizontal, vertical, or at any angle. Here spindle is being used on an interesting horizontal-axis job.

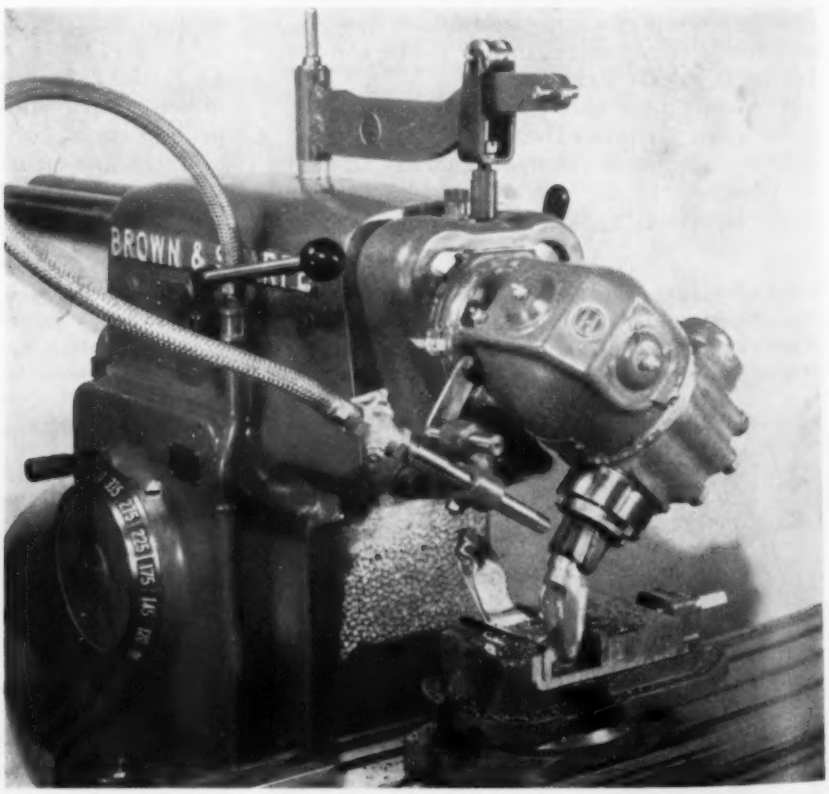
either straight or tapered-shank tools. Ability to drill, ream, and bore without loss of accuracy is often highly important.

Some manufacturers provide a quick-change adapter for use on a standard milling machine spindle nose, by means of which both quick-change collets and quick-change arbors may be applied. Cutter-changing time in either toolroom or shop can be reduced to a minimum through use of such devices.

A variety of operations, such as drilling, boring, end milling, facing or shell end milling, is possible with only one setting of the work. Standard end mills and sell end mills adready in the plant may be used in connection with such equipment.

Grinding operations may be performed on both horizontal and vertical milling machines. A fairly recent development is application of high speed precision grinders to the machine spindle. Some tools of this type are air powered, and make use of mounted wheels for high accuracy grinding in tool and die work.

The smaller the mounted wheel being employed,



COMPOUND settings of all types can be made with universal milling head attached to standard milling machines. The swivels of this head are graduated for easy setting.

the higher the speed should logically be. One attachment has variable speeds of from 30,000 to 65,000 rpm. Such grinders may also be used in connection with tiny cutters such as burrs.

Some attachments for horizontal milling machines, in addition to holding a cutter with its axis vertcal, are arranged to swvel to any degree in front of the column. Another type of attachment is a universal milling attachment. It is provided with means for swiveling to any desired point in either the vertical or the horizontal plane. Combinations of both swivel provisions may be used to bring the axis of the tool to any desired angular position.

Attachments extend versatility

Vertical or universal milling attachments may be swiveled to such a position that the cutter is held with its axis horizontal. In such position, attachments may be employed not only for horizontal milling, but for horizontal drilling or boring.

Versatility of horizontal milling machines is greatly extended through use of slotting attachments. These provide means for handling a wide variety of toolroom and small-lot work, such as cutting keyways, forming special tools and dies, and making templates. Because the milling machine table provides accurate longitudinal, transverse, and vertical adjustment, it is easy to locate work for slotting.

Usually, a slotting attachment is provided with a slide driven from the machine spindle by a crank of adjustable radius. This allows an operator to select any length of stroke from zero to maximum. The slotting tool is held in position on the toolslide by means of a clamp bolt. A number of different tools are available for use with slotting attachments.

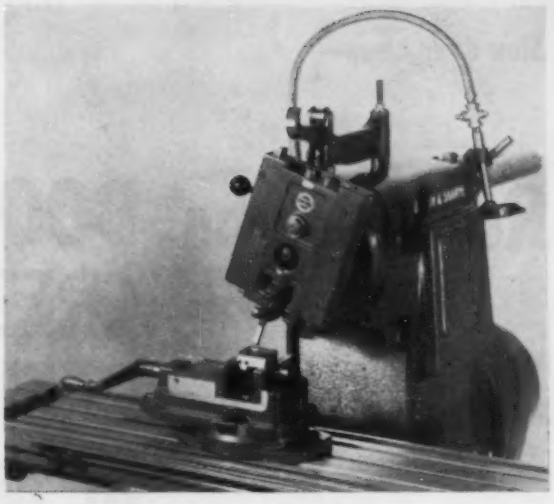
Have many applications

Slotting attachments are highly convenient for use of tool and die makers, but their use also extends into regular production operations in many shops. Some slotting attachments used with standard horizontal milling machines are provided with a scale on the front. This scale facilitates setting length of stroke. These have a maximum stroke of 4 in. The set of tools includes three round-pointed tools of different diameters, four square-pointed tools of different sizes, one angle tool, and two parting tools.

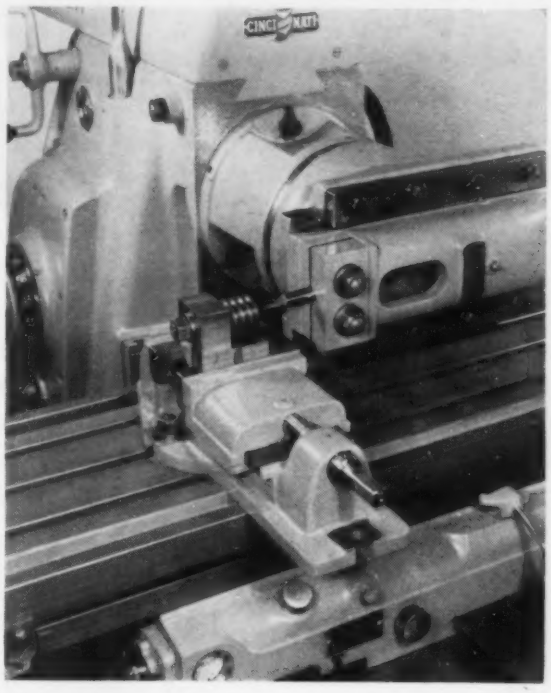
Slotting attachments have a wide range of applications when used in conjunction with circular milling attachments or with dividing heads. In addition to toolroom and general production operations, they are found particularly valuable for general repair work. The number of ram or toolslide strokes per minute is generally the same as the rpm of the milling machine spindle.

There are some rotary tables, slotting attachments and other equipment which may be used with bench mills. To apply a slotting attachment to a very small milling machine, and yet provide it with sufficient room for a suitable vertical stroke, it is necessary to change the design radically.

One slotting attachment suitable for bench milling machines mounts on the overarm of the mill. A roller chain sprocket is then attached to the regular milling machine spindle. A roller chain drive is operated from this sprocket to a sprocket on the attachment. This tool is suitable for all vertical slotting operations, and puts dies, square or splined holes, internal gears, and various other shapes within the scope of the bench mill.



SLOTTING attachment in use on milling machine. Length of stroke is adjustable, and attachment swivels.



KEYWAY being produced in a worm gear, using a slotting attachment swivelled into horizontal position.

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Slow down creep—

Rare earths BOOST CREEP RESISTANCE of Mg-Zr alloys

By W. G. Patton
Asst. Technical Editor

Finding alloys with high strength-weight ratios and ability to meet increasing stresses at elevated temperatures for aircraft applications has stumped engineers and metallurgists. Alloys must be capable of handling in the foundry. Now, by adding 2 to 4 pct rare earths to Mg-Zr alloys, Dow Chemical has come up with new metals with outstanding high temperature properties.

At 300°F and higher, cast magnesium-zirconium alloys containing 2 to 4 pct additions of rare earth metals have consistently exhibited as much as five times the creep strength of the older magnesium-aluminum-zirconium type alloys. Such properties are particularly valuable in applications such as aircraft engines which require outstanding elevated temperature properties as well as high strength-weight ratios.

Room temperature properties of magnesium alloys stabilized by the addition of misch-metal are lower than Mg-Al-Zn types.

The most promising field of usefulness for cast Mg-rare earth metals at the present time is in aircraft engines, Fig. 1. In this application stresses are relatively high; operating temperatures are in the range of 400°F.

The importance of good creep resistance in aircraft castings can hardly be overestimated. Loads are applied to jet engine castings, for example, for several hundred hours. Stresses arise from the weight of the engine and simply from maneuvering the plane. Stresses may also result from differential thermal expansion.

Unless the cast part is capable of resisting these stresses for prolonged periods at temperature, the material may deform or creep. Ultimately, the part grows so much it ceases to function.

Laboratory and service data show that the fatigue strength of cast alloys of this type, while important at room temperature, is not critical at elevated temperatures. In any event, creep data can be more directly related to the service performance of Mg-Al-Zn and Mg-rare earth-Zr alloys than can fatigue data.

The most important room temperature requirement of Mg-alloys to be used at elevated temperature is freedom from brittleness. This permits handling in the foundry and in the shop without excessive breakage. These alloys can be readily handled in the foundry.

Resistance to corrosion of Mg-rare earth-Zr alloys is satisfactory. Service experience indicates that any ordinary corrosion that may occur is less troublesome than galvanic corrosion generated at points of contact with other metals.

Foundry properties of Mg-rare earth-Zr alloys are also satisfactory. These alloys have been produced in the foundry, using the same

molding and core sands, sprays, chills and pattern rigging used in producing magnesium-aluminum alloys. While slight modifications in pattern rigging have been made to cast some parts, no changes in handling the molds have been required. Ratio of metal shipped to metal cast is about the same as for magnesium-aluminum alloys.

Magnesium-rare earth metal alloys were investigated many years ago in Germany. Extensive European and U. S. research has been conducted. Alloys containing rare earth have been available commercially in this country for several years.

Zirconium is an essential element used for grain refinement of these magnesium alloys. As a grain refiner, it improves both the mechanical properties and castability of the alloy. Refinement is necessary to give sufficient ductility so the part is castable and usable at room temperature.

Mg-Zr-base alloys being cast commercially contain 3 pct rare earth metal, added as "mischmetal." The current price of mischmetal is $4.50 per lb. A recovery of 0.1 pct Zr is required for grain refinement.

Mischmetal is usually added to these alloys as a metallic substance which can be bought

TABLE I

ANALYSIS OF MAGNESIUM ALLOYS

Alloy*	Nominal Composition, Pct					Solution Heat Treatment		Precipitation Heat Treatment		Grain Size Test Bars In.
	Zr	Rare Earths	Zn	Al	Mn	Temp. Deg. F	Time Hr	Temp. Deg. F	Time Hr	
EK30A-T6	0.25	3.0	....	....	....	1050	16	400	16	0.004
EK31A-T6	0.55	3.0	....	....	....	1050	16	400	16	0.001
EK30B-T6	0.25	3.0	....	....	....	1050	16	400	16	0.004
EZ33A-T5	0.70	3.0	3.0	....	....	....	....	350	12	0.002
EM61B-T6†	....	6.0	....	....	0.8	1015	16	400	16	0.03
AZ92A-T6	....	....	2.0	9.0	0.2	770	18	425	5	0.003

* EK30A, EK31A, EZ33A, and EM61B made with mischmetal (Ce, La, Nd, Pr). EK30B made with low-cerium mischmetal (mischmetal minus most of Ce)
† Also contains 0.2 pct Ni and 0.02 pct W.

TABLE II

PROPERTIES FROM SEPARATELY CAST TEST BARS

Alloy	Room Temperature (70 °F)			400 °F				600 °F			
	Tensile Strength 1000 Psi	Yield Strength	Elong., Pct	Tensile Strength 1000 Psi	Yield Strength	Elong., Pct	Stress* 1000 Psi	Tensile Strength 1000 Psi	Yield Strength	Elong., Pct	Stress* 1000 Psi
EK30A-T6	23	16	3.0	20	14	18	7.2	12	7	56	1.6
EK31A-T6	25	19	4.0	21	16	19	8.0	13	9	78	1.5
EK30B-T6	26	17	3.0	23	15	14	8.8	13	9	61	1.3
EZ33A-T5	22	18	3.0	21	10	21	7.5	12	8	50	1.4
EM61B-T6	18	15	1.0	18	13	3	10.2	16	9	45	3.0
AZ92A-T6	42	26	2.0	17	11	35	1.3	8	5	108	0.4

* For 0.2 pct total extension in 100 hr.

FIG. 1—Engine parts cast from magnesium-rare earth-zirconium alloys have up to five times the creep resistance at high temperatures of magnesium-aluminum-zirconium alloys.

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Less high temperature fading—

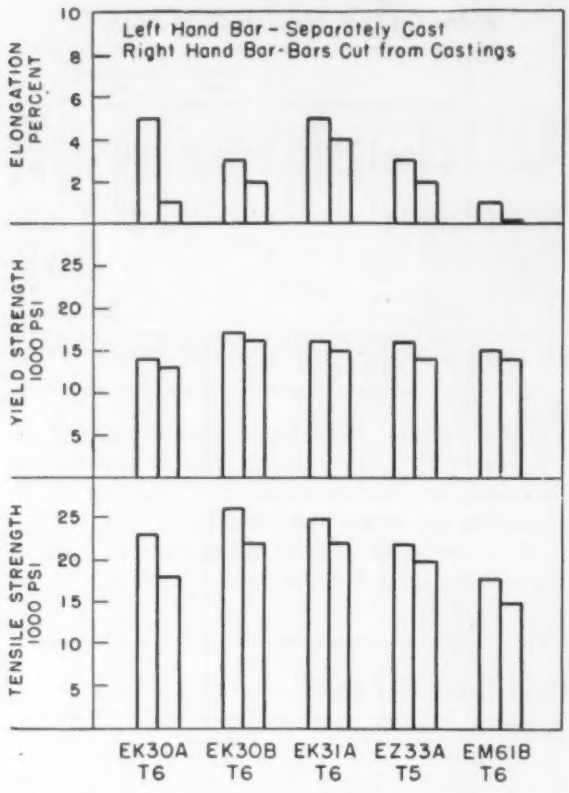

FIG. 2—Average tensile properties of separately cast bars with bars cut from castings, at 70°F, are compared above.

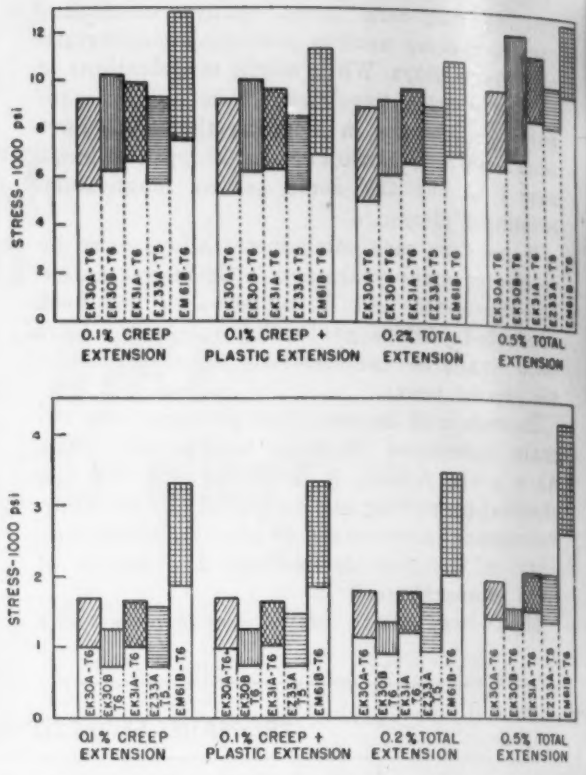

FIG. 3—Bar graphs show range—100 hr creep limits, for bars sectioned from castings. Tests at left were made at 400°F, while those pictured at right were made at 600°F. Data on alloys are taken from scattered bands.

on the open market. Description of other methods of adding rare earth metals can be found in the literature. Zr, although alloyable in metallic form, is usually alloyed using Zr-containing salts.

Table I summarizes the analysis, solution heat treatment and grain size of several Mg-Zr alloys containing rare earths. To permit comparisons to be made, a typical Mg-Al-Zn alloy (AZ92) was added to the list of metals tested.

Room and elevated temperature properties of the same alloys are shown in Table II. These properties were determined on separatly cast test bars. It will be observed that the excellent tensile properties of Mg-Al-Zn alloys at room temperature fade very quickly as temperature increases.

A comparison of average tensile properties[1] at room temperature of separately cast Mg-rare earth base alloys with bars sectioned from castings is shown in Fig. 2.

The range of creep limits[1] of the castings poured in five compositions is presented, Fig. 3, for four parameters of creep at 400°F and 600°F. These data are taken from scatter bands.

The tables show that the Mg.rare earth-Zr alloys have good tensile properties and outstanding resistance to creep. All of the Mg-rare earth-Zr alloys, including those containing zinc, have approximately equal properties at room temperature. The Mg-rare earth-Zr alloys are outstanding for high creep strength at elevated temperatures.

Ek 30 Mg-rare earth-Zr alloy can be used in the as cast and aged condition. To obtain maximum tensile properties, the alloy should be heated at 1050°F before aging.

Experience at the Dow foundry shows EK 30 can be handled more economically than the other alloys shown in the table and at production rates comparable with other Mg alloys. As shown in Fig. 2, yield strengths are comparable to separately cast test bars. Ductility of the bars made from the castings is appreciably reduced. Tensile strength is also somewhat lower.

EK 30 alloy can be welded, using helium or argon gas.

Chemical treatment to protect the casting during shipment and storage is generally the same as for AZ92 alloys (Dow No. 1). A Dow No. 9 galvanic anodize or the Dow No. 10 sealed chrome-pickle should be used before painting.

Recent research by Leontis, and by Sauerwald has indicated that Mg-Zr alloys containing didymium or Th exhibit desirable properties for high temperature applications.

[1] A Castability and Property Comparison of Several Magnesium-Rare Earth Sand Casting Alloys. K. E. Nelson and F. P. Strieter, Transactions, American Foundry Society, 4-23-51.

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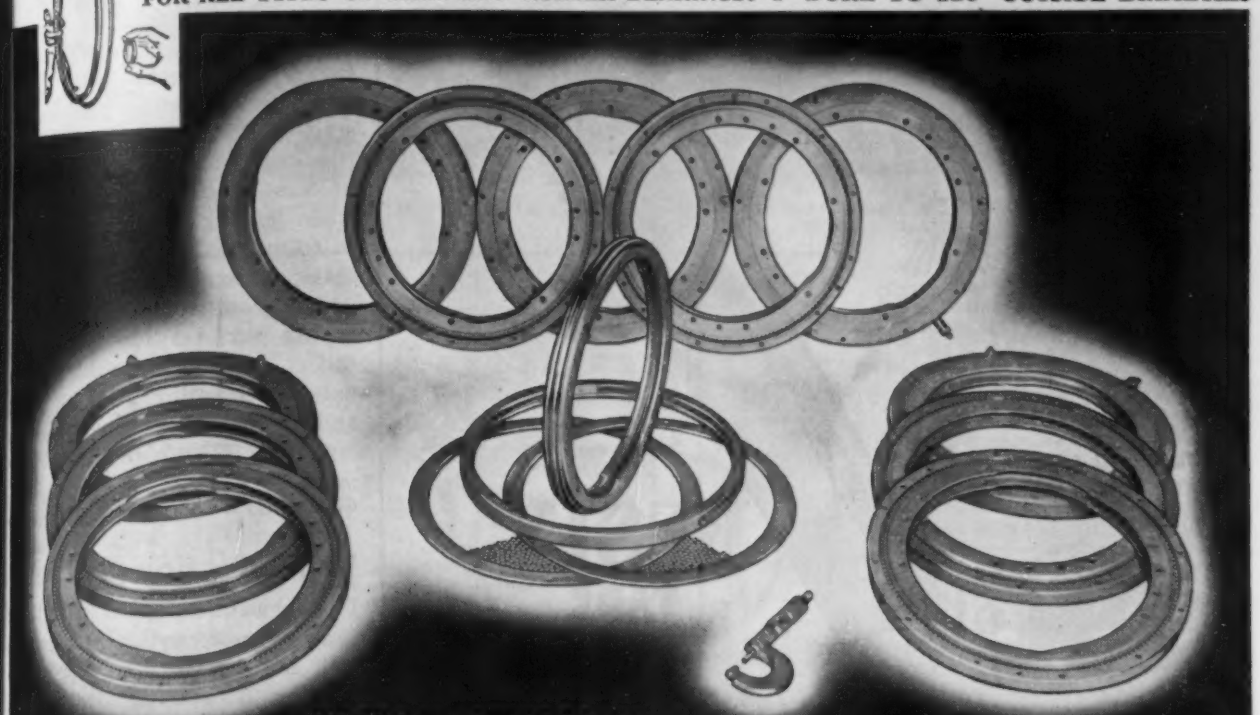

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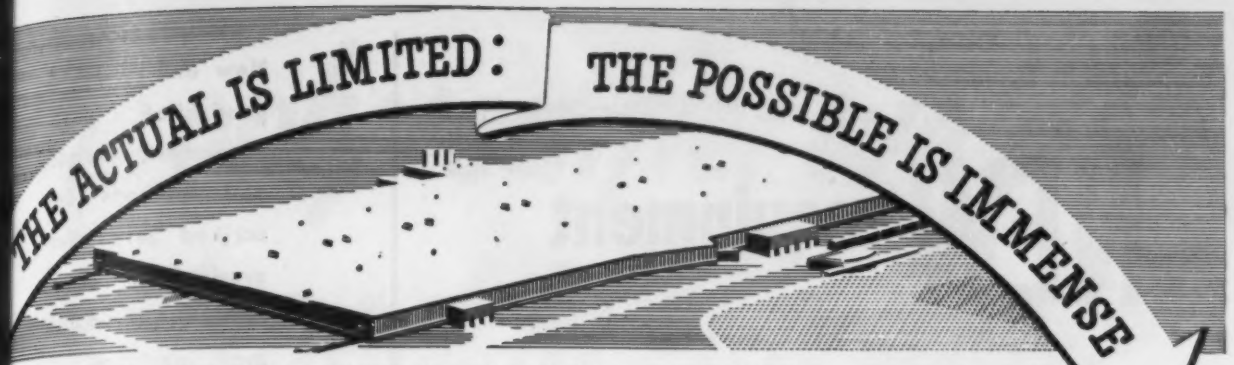

NEW LINCOLN PLANT CREATED BY INCENTIVE-INSPIRED CO-ACTION IN DEVELOPING POSSIBILITIES IN PRODUCT

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HOW TO ESTIMATE SAVINGS WITH STEEL

THE table (Fig. 3) provides a rule-of-thumb comparison on which to estimate savings with welded steel. The figures shown are based on shop costs of $2.00 per hour and 200% overhead. Welded steel designs that do not already average 50% savings can be analyzed similarly to detect excessive fabricating expense.

CASTING		WELDMENT Fig. 3				
AVERAGE DESIGN		EQUIVALENT MATERIAL DESIGN		50% EXCESS MATERIAL DESIGN*		
		50% Cost Reduction	25% Cost Reduction	50% Cost Reduction	25% Cost Reduction
Weight (lbs.)	Cost ($)	Allowed Labor Time (hours)		Allowed Labor Time (hours)	
10	1.60	.11	.17	.09	.16
20	3.20	.22	.35	.18	.32
40	6.40	.43	.70	.36	.63
60	9.60	.65	1.05	.55	.98
80	12.80	.70	1.40	.73	1.27
100	16.00	1.17	1.75	.92	1.59
200	32.00	2.27	3.50	1.83	3.17
300	48.00	3.25	5.25	2.75	4.75
500	80.00	5.42	8.75	4.60	7.90
700	112.00	7.60	12.25	6.40	11.10
1000	160.00	10.85	17.50	9.15	15.80
1500	240.00	16.25	25.40	13.75	23.80
2000	320.00	21.70	35.00	18.35	31.70
2500	400.00	27.10	43.70	22.90	39.50
3000	480.00	32.50	52.50	27.50	47.50

* Products with design sections having 50% more steel than equivalent needed to carry loads.

HOW TO DESIGN IN WELDED STEEL—Complete training course for designers and production engineers now available for presentation in your plant. Send for complete details.

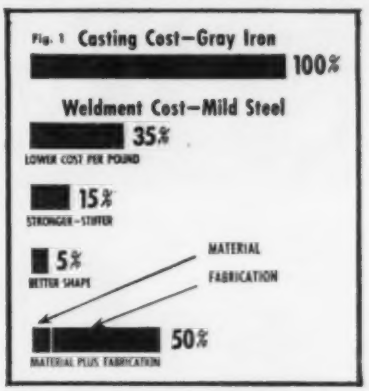
Fig. 2—"Equivalent Sections in Steel" using good shaping practices are:

TYPE OF LOAD	DESIGN NEED	AMOUNT OF STEEL AREA NEEDED TO REPLACE IRON SECTION
Tension	Rigidity	40%
	Strength	25%
Compression Short Column	Rigidity	40%
	Strength	90%
Compression Long Column	Rigidity	35%
	Strength	35%
Bending	Rigidity	35%
	Strength	20%
Torsion	Rigidity	35%
	Strength	25%

PROPER DESIGN IN STEEL IMPROVES PRODUCT CUTS COST 50%

SINCE steel is credited with being 2½ times more rigid and 4 times stronger than run-of-foundry gray iron, material costs can be cut as much as 95% on many products when converting to welded steel.

Replacing cast iron with steel on a pound-for-pound basis, without changing product shape, cuts material costs 63%. Then, by using the right amount of steel and still without changing product shape, 60% to 75% of the metal can be eliminated and material costs reduced to 15%. Ultimately utilizing a more efficient product shape, possible only with steel, reduces material cost to as low as 5%.



Most production savings are achieved on product conversions where simply the correct amount of steel or "equivalent section in steel" is incorporated into the design (Fig. 2). The chart (Fig. 3) shows how much fabricating is possible on such conversions to maintain overall production savings averaging 50%.

HOW TO SAVE 50%

Machine Design Sheets available on request. Designers and Engineers write on your letterhead to Dept. 56,

THE LINCOLN ELECTRIC COMPANY

CLEVELAND 17, OHIO

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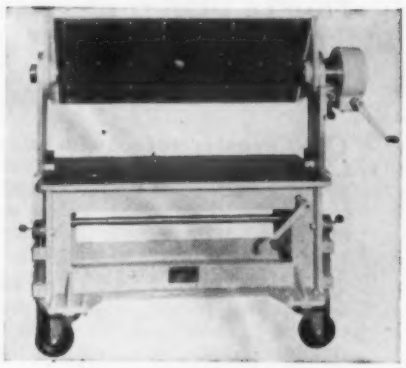
NEW equipment

New and improved production ideas, equipment, services and methods described here offer production economies . . . fill in and mail postcard on page 139 or 140.



Machine takes die apart for inspection

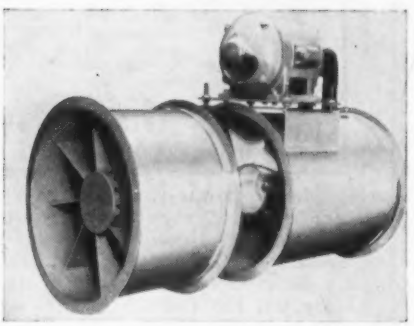
A rugged, accurate and portable die-handling device takes dies apart for inspection and is of great assistance in the assembly of the die, doing away with block and tackle procedure. For safety to personnel, protection of expensive dies and saving time the die handler is valuable to die shops and tool rooms. It handles dies up to 24 in. wide x 43 in. long. Upp platen, 20 x 42 in., has vertic travel of 16½ in. It may be r tated 360°, with a locking pin us at 5 angular positions if requir Cam operated legs raise the m chine off the floor and level t work for machining or drillin *Hansford Mfg. Corp.*

For more data circle No. 19 on postcard, p. 1

Straddle carrier handles 45,000-lb loads

Said to be the largest capacity straddle carrier ever built, a Ross Series 100 is solving the problem of transporting heavy, unwieldy loads of steel plate at Lukens Steel Co. The huge machine handles loads 124 in. wide x 72 in. high, any length, and weighing 45,000 lb. Because it is self-loading and unloading, it requires only a driv It is powered by a six-cylinder hp gasoline engine, has four-wh hydraulic steering and four-wh hydraulic brakes. Load lifti mechanism is fully hydraulic f smooth, positive functioning. *Ro Carrier Co.*

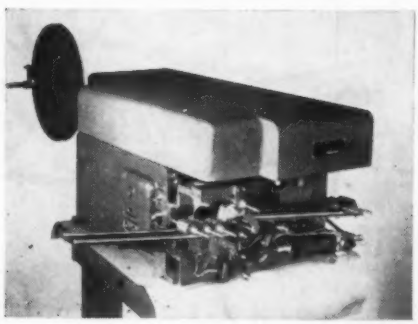
For more data circle No. 20 on postcard, p. 1



High pressure air flow for ventilating systems

Industrial air tubeaxial and vaneaxial fans are for use in ventilating systems where high pressure air flow is required. They are ruggedly constructed, economical to operate and easy to install. Tubeaxial fans are for system ventilation, and may be connected to inlet or outlet duct as installation may require. Vaneaxial fans ha guide vanes to straighten out t air stream, giving a true axial flo and increasing mechanical ef ciency. Both fans are available direct or belt driven units, in siz from 12 to 48 in., motors from to 50 hp. *Harvey P. Bertram C*

For more data circle No. 21 on postcard, p. 1



Armature slot insulating can be automatic

Full automatic slot insulating is made possible by the arrangement on the Globe automatic insulating machine. Individual insulators automatically formed from roll strip supply are cut off and inserted into the armature at the indexing position. Upon completion, that armature is deposited on the off-bearing rack, and a core from the enteri rack is picked up and insulate Cycle control switches guard t machine, stopping the cycle up shortages of armatures, insulati paper supply, or possible jamm operation. *Globe Tool & Engine ing Co.*

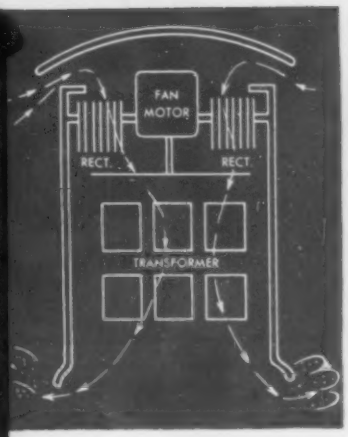
For more data circle No. 22 on postcard, p. 1

Turn Page

The only rectifier welder designed to eliminate stack failure!

High-velocity, DOWNDRAFT VENTILATION keeps rectifier stacks cool in the

A.O.SMITH D.C. WELDER



Sectional view of the new A. O. Smith Rectifier-type D.C. Welder and diagramatic drawing show ideal location of stacks and circulation of high-velocity air through the welder.

Available in 200-, 300-, and 400-amp. models.

Location of rectifier stacks in the flow of cool, clean air entering the top of the A. O. Smith D.C. Welder assures positive cooling of these most critical parts.

Wind tunnel design, proved for more than a decade in A. O. Smith Heavy Duty Welders, blasts cool air down and over rectifier stacks. This prevents stack failure. In addition, clean rectifier stacks and clean glass-insulated heavy copper transformer coils are assured. Maintenance down-time is thus avoided.

This marked advance over conventional rectifier-type welders solves overheating problems, ends limitations on duty, avoids introduction of floor dirt and eliminates rectifier stack failure.

Other refinements provide effortless amperage control, universal application and economical operation. They, too, are exclusive in this advanced design, rectifier-type, D.C. Welder.

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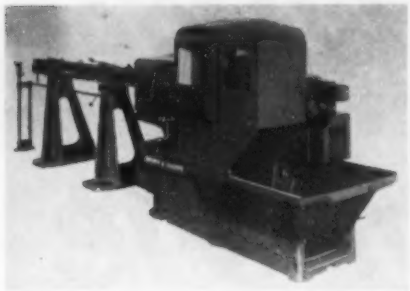
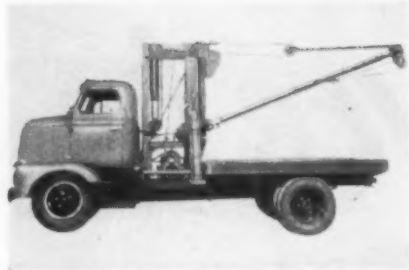


Screw machine produces medium size work

Close tolerances combined with good finish are claimed for the new B&S No. 4 automatic screw machine. Spindle has positive chain drive at all speeds and is provided with 168 two-speed combinations including a wide range of high to low speed ratios. Equal cutting efficiency is obtained on materi ranging from tough alloy steels free-cutting plastics on a w range of work diameters. Prod tion rates range from 12 sec to min per piece. *Brown & Shar Mfg. Co.*

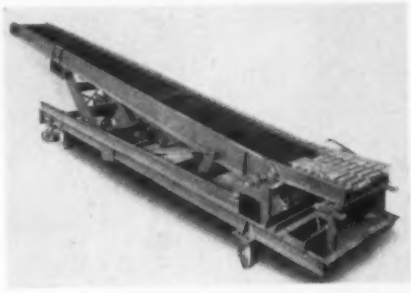
For more data circle No. 23 on postcard, p.



Crane can be mounted on 1½-ton truck

Hydra-Lift Model B with hydraulically-powered boom requires 40 in. behind the cab of a truck, has a loadline capacity of 6400 lb and swinging boom telescopes from 12 to 17 to 22 ft. Two chief improvements in the new model are: a big increase in the unit's safety margin; and it is shipped almost co pletely pre-assembled, cutting stallation time and costs. Le controls provide easier operati A special set of controls for ope tion of the Hydra-Lift outside cab is available. *Pitman Mfg.*

For more data circle No. 24 on postcard, p.



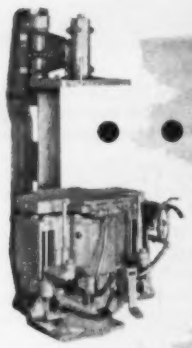
Conveyer simplifies unloading drums from cars

A slider bed conveyer is especially adaptable for unloading drums from box cars or gondola cars. For use with gondola cars, the boom is raised by a hydraulic lifting device, and may be set at any height between the maximum and minimum points of vertical travel. A short roller apron receives drums, or is used to transfer dru to another conveyer. Conveyer 24½ in. wide, 22 ft from center center of pulleys. Incline of boo can be 11°. Belt speed is 40 fp *Alvey Conveyer Mfg. Co.*

For more data circle No. 25 on postcard, p.

FROM THE SMALLEST

There's a SPO for every job!



From the smallest to the world's largest jolt-squeeze-stripper, **SPO** has a model to meet every foundry production need. **SPO** molding machines range from small, portable, manually operated units to fully automatic, push-button giants.

Regardless of its size, each **SPO** molding machine is built for safe, dependable operation and maximum accuracy. Many feature the patented "inverted jolt" mechanism which assures extremely long service life with minimum maintenance. All incorporate **SPO** air vibrators which are known for their sturdy construction and operating efficiency.

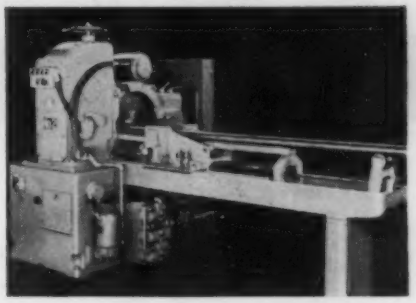
Whatever your production schedule, **SPO** builds a molding machine to meet your requirements. To obtain the finest foundry equipment available today, **SPECIFY SPO . . . *the world's largest supplier of molding machines.***

Write today for Bulletin No. 2000 for complete data.

SPO INCORPORATED

817-SI

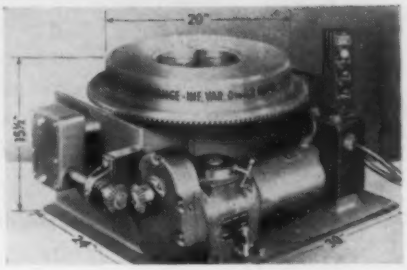
Sawing machine equipped with stock feeder



A new stock feeder on the Motch & Merryweather No. 2 circular sawing machine feeds automatically bar stock for shell forgings. It consists of two heavy duty serrated feeder grippers mounted on a slide. Bar stock is positioned on the supporting V-channel under the hydraulically actuated vertical vise for the initial cropping, squaring cut. Thereafter feed is automatic. Grippers clamp the stock and the entire slide moves the stock forward the required length. Capacity: 1 to 6½ in. round stock, ¼ to 36 in. feed length. *Motch & Merryweather Machinery Co.*

For more data circle No. 26 on postcard, p. 139.

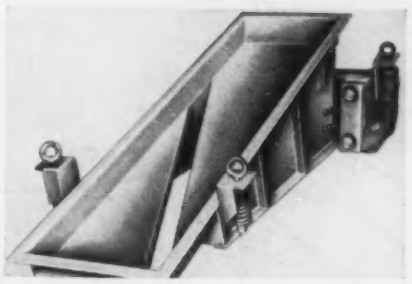
Turntable handles large diameters



A big hole turntable was designed for mounting on a bench, the floor or a pit to rotate heavy, large diameters on the horizontal plane only, for welding, painting, cleaning operations. With its 9-in. center hole, spindle shafts can be positioned without special fixturing. Infinitely variable speeds of the worktable from 0 to 1.2 rpm can handle wide range of work. Precision-cut steel fabricated gears offer a minimum of backlash for smooth precise rotation forward and reverse. *Aronson Machine Co.*

For more data circle No. 27 on postcard, p. 139.

Vibrating feeder spreads bulk materials



New vibrating spreader feeder provides a continuous curtain of bulk materials. The feeder is made with a flat pan trough having a diagonal slot and powered by a single electromagnet drive. The latter is mounted above or below the pan trough, depending on the room available. Rate of feed is controllable. Vibratory action flows the material out along the trough, discharging it along the edge of the slot to form a constant, even curtain. *Syntron Co.*

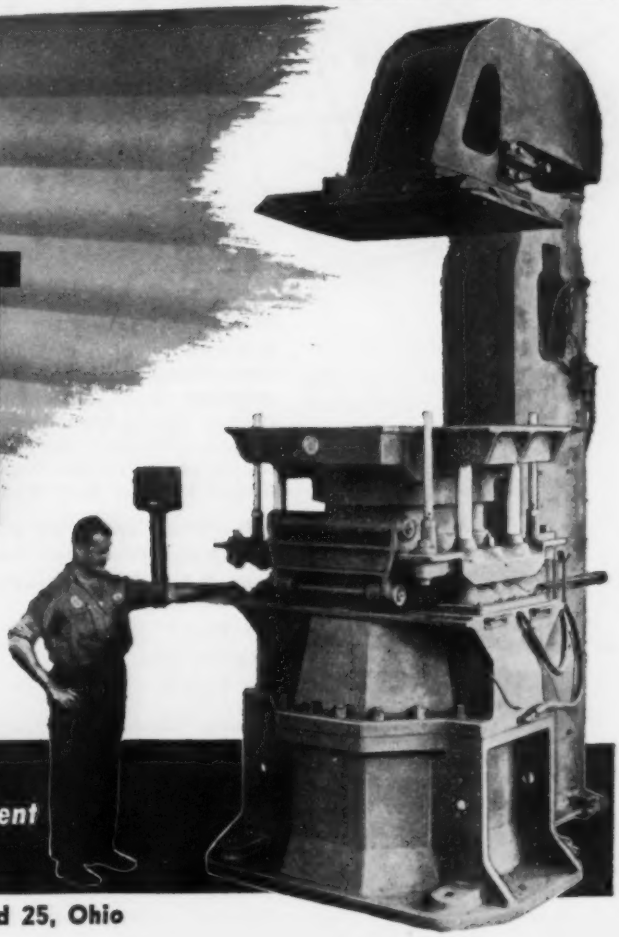
For more data circle No. 28 on postcard, p. 139.

Turn Page

TO THE

BIGGEST

Molding Machine



Manufacturers of MILWAUKEE type foundry equipment

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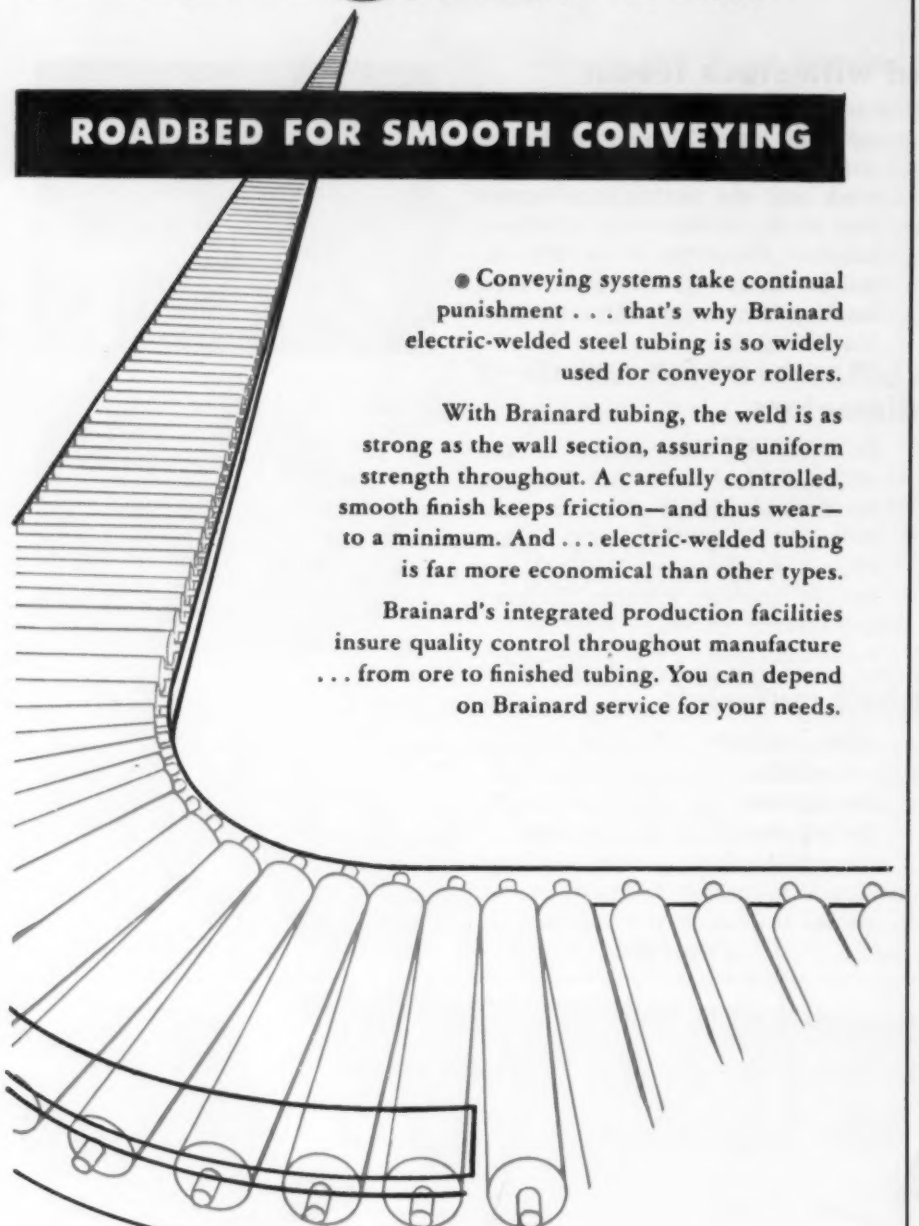
ROADBED FOR SMOOTH CONVEYING



● Conveying systems take continual punishment . . . that's why Brainard electric-welded steel tubing is so widely used for conveyor rollers.

With Brainard tubing, the weld is as strong as the wall section, assuring uniform strength throughout. A carefully controlled, smooth finish keeps friction—and thus wear—to a minimum. And . . . electric-welded tubing is far more economical than other types.

Brainard's integrated production facilities insure quality control throughout manufacture . . . from ore to finished tubing. You can depend on Brainard service for your needs.

EASILY FABRICATED

Brainard tubing is a uniform product made to close tolerances. Has good machining qualities and finish can be supplied as specified. Easily fabricated—can be beaded, expanded, swaged, spun, flanged, upset, grooved, fluted, flattened, tapered, and otherwise formed. Supplied straight or fabricated, sizes ½" to 4" O. D.; .025 to .180 gage.

Fast delivery on certain sizes. For further information or catalog, write Brainard Steel Division, Dept. O-5, Griswold Street, Warren, Ohio.

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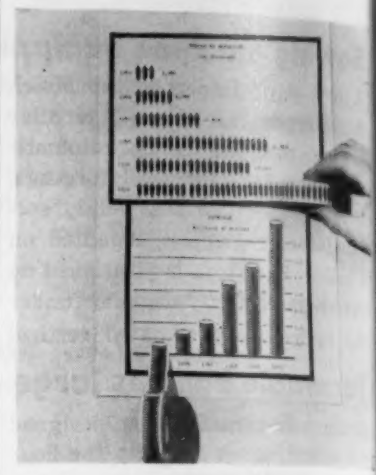
—New Equipment—

Continued



Pictographs on tape

Pictographs on pressure-sensitive tapes simplify graphic chart construction. PictoTapes enable anyone to make professional looking graphic charts which put life into dry statistics. Initial patterns include figures of men, women, children, stacks of coins and stacks of bills. Other symbols will be available. Rolls of self-adhering tapes are ⅝ in. wide x 300 in. long. *Chart-Pak, Inc.*

For more data circle No. 29 on postcard, p. 139.

Dust-collector fabrics

Designed for dry-separation equipment and dust collectors, two new Orlon weaves are suited for use with hot, corrosive materials. They can be used at operating temperatures to 300°F and resist chemical attack by strong mineral acids, chlorine, solvents, oils and alkalies. *Filtration Engineers, Inc.*

For more data circle No. 30 on postcard, p. 139.

Pitchlign bearing

Pitchlign bearings have the same dimensional advantages as precision needle bearings. They offer roller alignment formerly found only in precision cylindrical roller bearings and the ruggedness, flexibility of mounting, and easy maintenance of journal roller bearings. Pitchlign rollers cannot cock or skew. They are kept in perfect alignment by cage contact at their pitch line. They can be mounted in any plane—horizontally or vertically. *Roller Bearing Co. of America.*

For more data circle No. 31 on postcard, p. 139.

X-ray cabinet

Fabricated for radiographic or fluoroscopic inspection of parts an industrial cabinet is designed for straight line or rotary operation. Trays for holding film and parts are moved into cabinet from either end, facilitating X-ray exposures. After each exposure, lead lined doors are raised and parts trays are moved into position for next exposure. Cabinet is lead-lined metal with pneumatically operated lead-lined sliding doors that afford operator protection from all radiation. *Bar-Ray Products, Inc.*

For more data circle No. 32 on postcard, p. 139.

Cooling-lubricating

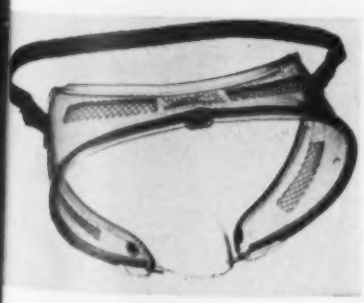
Lubri-Cut, a new cooling and lubricating agent reportedly triples production output and increases life of taps, drills and cutting tools up to 12 times. This fire-resistant compound is free from abrasives and acids. Its special cooling and lubricating agents cling to the tool to effect high results. Lubri-Cut, available in paste and semi-paste form, permits close tolerances. *Tap & Drill E-Z Corp.*

For more data circle No. 33 on postcard, p. 139.

All-plastic goggle

A new all-plastic goggle has a flexible, fully transparent frame molded of Vinylite. Although frame comfortably conforms to all facial contours, a new lens retaining feature adds sufficient rigidity to the frame to maintain protective efficiency. Lens is 0.060 in. acetate and separately replaceable. Goggle gives all-day comfort, weighs just over an ounce. It fits over all types of prescription glasses. *Willson Products, Inc.*

For more data circle No. 34 on postcard, p. 139.



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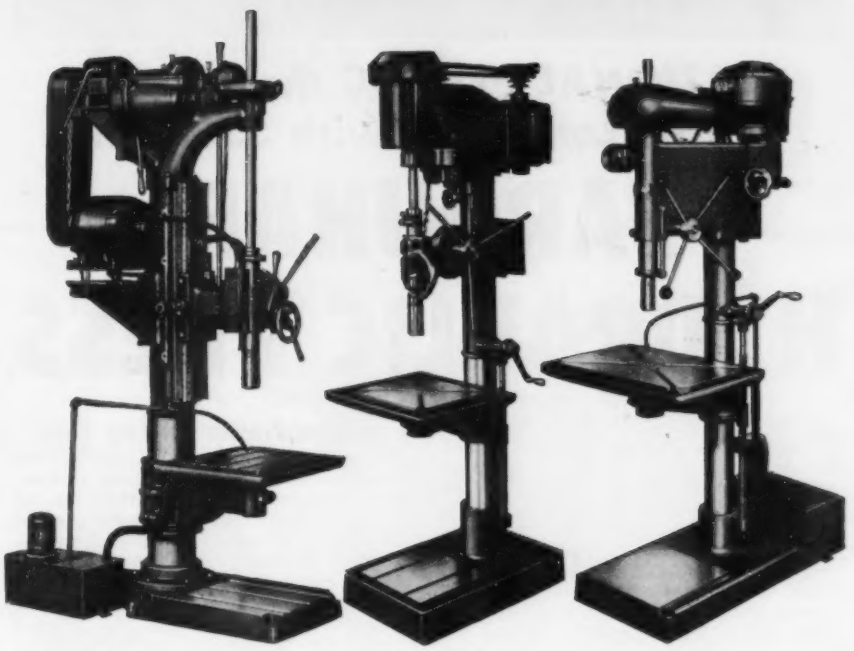
AS OF JUNE 1st, 1952, SIBLEY CAN DELIVER DRILLING MACHINES *AGAINST RATED ORDERS* IN 30 TO 60 DAYS!



Models D-24, D-28 available in 24″ and 28″ swing; 1¾″ capacity; 3 speed options; geared power feeds; four speed geared transmission; 25″ head travel; 11″ spindle feed.

Model C-20 has 20″ swing; 1″ capacity in mild steel; eight spindle speeds from 65 to 1360 R.P.M.; geared power feeds; automatic spindle stop; 2 H.P. motor; tachometer.

Model E-25 features large swing of 25″; variable speed drive for drilling ⅛″ to ¾″; 1½ H.P. motor; tachometer shows exact spindle speed; self-locking speed control.

SIBLEY

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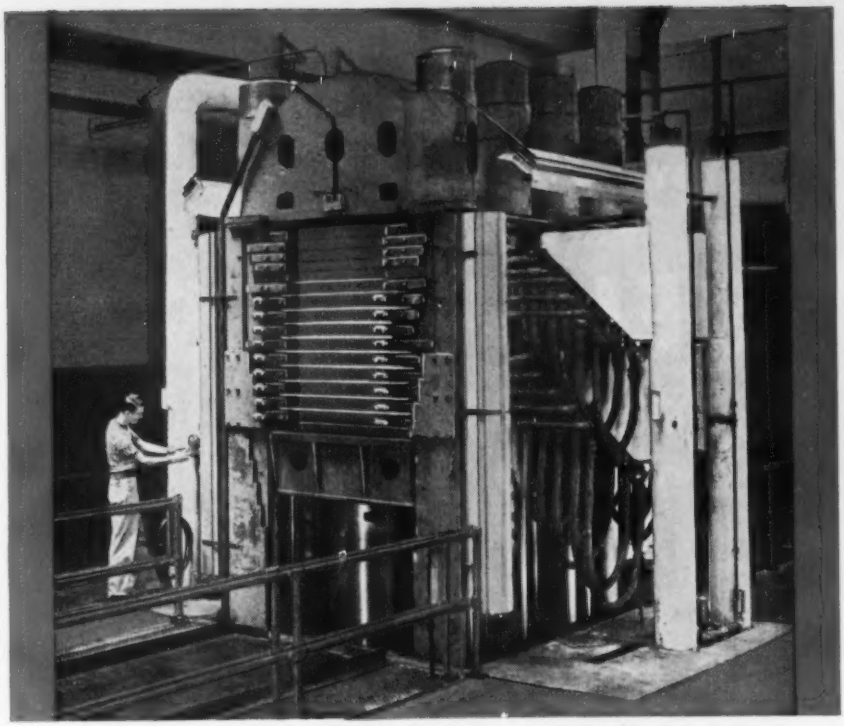

NATIONAL PLASTIC thermo-sets Plastic Laminates with 3500-ton

FARQUHAR HYDRAULIC PRESS

The National Plastic Products Company, of Odenton, Maryland, required a hydraulic press for use in the thermo-setting of their NEVAMAR Plastic Laminates . . . a press that would be able to mold this material to very close tolerances.

Farquhar engineers supplied the answer with this built-to-specifications Hydraulic Press. The complete, self-contained hydraulic pumping unit has a capacity of 3500 tons. Each of the 15 hot plates has a clear working area of 50″ x 100″. Total working stroke: 49″.

The efficient Farquhar hydraulic circuit operates with a minimum number of valves —thus reducing maintenance cost considerably.

Its production problem solved, National Plastic is now successfully turning out Plastic Laminates to their exacting requirements.

Farquhar Presses Cut Your Costs

Just one more example of cost-cutting Farquhar performance in heavy production. Farquhar Presses are built for the job . . . assure faster production due to rapid advance and return of the ram . . . greater accuracy because of the extra guides on moving platen . . . easy, smooth operation with finger-tip controls . . . longer life due to positive control of speed and pressure on the die . . . long, dependable service with minimum maintenance cost!

Farquhar engineers are ready to help solve whatever production problem you may have. Give them a call.

Send for Free Catalog showing Farquhar Hydraulic Presses in all sizes and capacities for all types of industry. Write to: A. B. FARQUHAR Co., *Hydraulic Press Division,* 1503 Duke St., York, Pa.

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for Bending • Forming • Forcing • Straightening • Assembling • Drawing
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—New Equipment—

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HF heating unit

For use with ferrous or nonferro metals in all metal working fie a new electronic high freque heating unit has been develop for soldering, brazing, hardenin annealing and other controlled he applications. Object to be heat is placed within a copper work co in front of the unit and the tim switch is activated for each e posure by a simple pushbutto Coils and accessory equipment a available to meet an infinite ran of heating applications. A skille operator is not required. *Lew Machine Co.*

For more data circle No. 35 on postcard, p. 1

Testing alloy steels

The new Arcweld creep testing ma chine was designed for maximu convenience and reliability by th Heppenstall Co. Research Labora tory, to test its special alloy steel used in high temperature applica tions, such as jet engines and ga turbines. Capacity is 12,000 lb Leading features are power liftin of loading weights; a stable, shock absorbing base that requires n anchor bolts; large, counter bal anced Arcweld furnace; and a spe cially designed temperature contro unit. Temperatures up to 1800°F in three heating zones can be indi vidually regulated. The machine i manufactured by *Arcweld Mfg. Co.*

For more data circle No. 36 on postcard, p. 119

Turn Page

GENERAL BLASTING CORPORATION

- Complete blasting and demolition services available to all metal, oil, railroad, steamship and construction companies.
- Expertly trained men with more than 20 years blasting experience.
- Write, wire, or call today for information, advice and costs on your blasting problems.

"We blast anything—safely—anywhere!"

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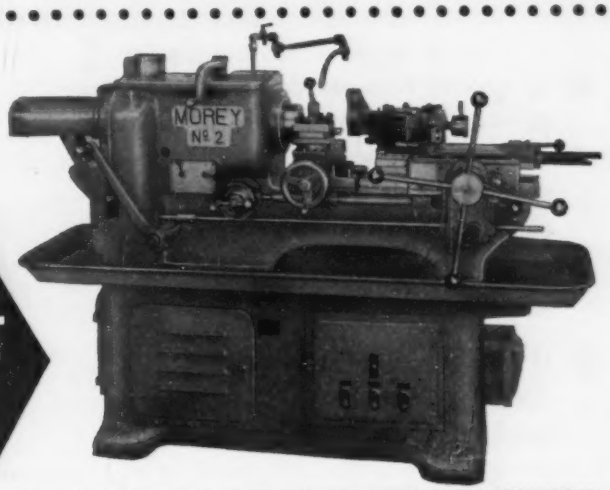
520 N. MICHIGAN AVE.
CHICAGO 11, ILLINOIS

PLANT: OAK LAWN, ILL. **WHitehall 4-0818**

For Ease, Economy and Simplicity of Operation

DEPEND ON THE **MOREY** No. 2 **TURRET LATHE**



Designed to take full advantage of tungsten carbide tools, the *modern* MOREY Turret Lathes are ruggedly and heavily built for continuous duty, maintaining close tolerances. New methods of speed and feed control are incorporated, permitting even the inexperienced operator to select almost instantaneously the speed and feed best suited to the work . . . Ideal for both bar and chucking operations.

- NOW AVAILABLE FOR PROMPT DELIVERY WITH PRIORITY!

PARTIAL LISTING OF SPECIFICATIONS:

Bar work capacity	1" dia. x 6"
Chucking capacity	8" dia.
Swing over bed	14"
Hole through spindle	1-9/32"
Spindle speeds (Back gear ratio): 60-2000 RPM Inf. variations with constant speed, AC 1800 RPM motor 1:5.8	
Motor	3 HP

You need the MOREY for your production! Write us today for complete details.

MOREY MACHINERY CO., INC.
Manufacturers • Merchants • Distributors
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● A special fastener often can improve product design and performance while cutting production costs. When you specify a Buffalo Bolt "Special"... you can be sure it is designed for the job and made by the most modern methods to the highest standards.

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BUFFALO
BOLT COMPANY
Division of Buffalo-Eclipse Corporation
North Tonawanda, N. Y.
Sales Offices in Principal Cities
PRODUCERS OF CIRCLE B PRODUCTS—BOLTS • NUTS • RIVETS AND SPECIAL FASTENERS

—New Equipment—

Continued

Electrical tape

Adapted to heavy duty work, winding heavy cables, electrical harnesses and for use with power driven taping machines, 0.010-in. plastic electrical tape has great strength and flexibility. It is resistant to weather, oils, acids, alkalies and corrosive chemicals. Dielectric strength averages 10,000 volts and because of its ability to stretch, it conforms well to irregular surfaces. *Van Cleef Bros., Inc.*

For more data circle No. 37 on postcard, p. 139.

Button-head screw

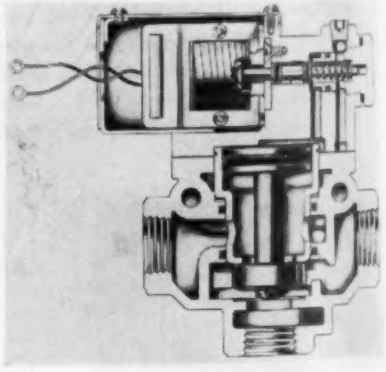
New button-head socket screw has high-strength, streamlined head and, in assemblies promotes safety and ease of cleaning. It is made of alloy steel and heat treated; available in seven thread diameters, in four to seven lengths. *Standard Pressed Steel Co.*

For more data circle No. 38 on postcard, p. 139.

Air control valves

Versatility and simplicity that effects reduced maintenance are features of a new Pilot-Master valve for directional control of air pressure. The main valve portion can be operated either 2-way or 3-way, normally open or normally closed to pressure, without any internal change, because inlet and exhaust ports are interchangeable. Main valve is pressure operated, through a piston-operated poppet which fits in a removable cartridge. Full ⅛ ips passages within the pilot valve, plus the fact pilot stem and main piston-poppet travel very short strokes, result in almost instantaneous valve action. *Hannifin Corp.*

For more data circle No. 39 on postcard, p. 139.



HOW TO SAVE MONEY ON STAMPING RUNS OF LESS THAN 10,000

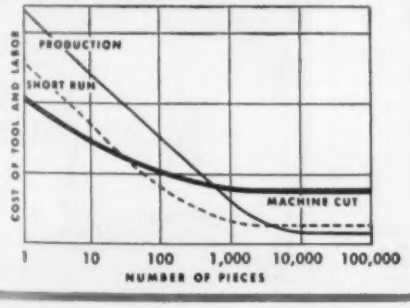
FOR EXAMPLE: TAKE THE PART ILLUSTRATED

If your total requirement is 1 to 65 parts, our Machine-Cut Method is the most economical. You pay no die costs whatsoever.

If your total requirement is for 65 to 7,000 parts, the Short Run Method using our exclusive Hecht-type dies, combined with specialized bench press operations, is most satisfactory. Die costs are extremely reasonable.

If your total requirement exceeds 7,000 parts, the standard Production Method, using the best quality dies, gives the lowest unit cost. Die costs, though higher, can be spread over a greater number of parts.

The logarithmic chart below shows the computation which the skilled Methods Engineer makes to arrive at this conclusion, for the particular part illustrated. Though the computation varies for almost every part, the general principle remains the same.



Send today for our free, 12 page booklet full of helpful facts on buying stampings. Profusely illustrated.

. . . the exclusively short run supplier is *NOT* always the best source

The Methods Engineer, skilled in stamping practice, will tell you that a run of 10,000 or less might be produced by any one of three methods. Here's what decides which is the most economical:

1. **The quantity of each run**
2. **The *total* requirement for the part**
3. **The costs of various *types* of dies**
4. **The labor factor**

Quantity alone does not decide the method.

THE MOST IMPORTANT ECONOMY FACTOR IN BUYING STAMPINGS IN LIMITED QUANTITIES

Whenever possible, advise your stampings supplier of your total requirements. Your *second order* of the same part may justify a production-type die on the *first* order. The chart at left illustrates this. Whenever you can, avoid buying the expensive labor factor that is necessarily figured in the Machine-Cut or Short Run Methods.

Get your quotations from a stampings supplier who can impartially quote you on the most efficient production method. This will be the supplier, like our Stampings Division, who is equipped for all three!

STAMPINGS DIVISION

LAMINATED SHIM COMPANY, Inc.

3205 UNION STREET *ESTABLISHED 1913* GLENBROOK, CONN.

FOR EFFICIENT PRODUCTION — WHETHER ONE PART OR A MILLION

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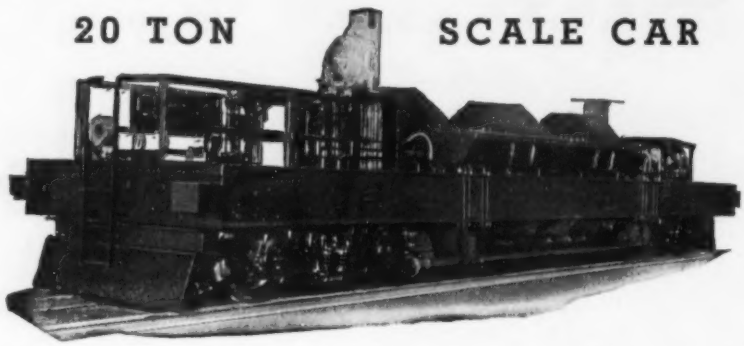
DEPENDABLE PERFORMANCE

is assured

TO USERS OF ATLAS CARS

Atlas steel plant equipment has earned an outstanding record for dependability. The ability of Atlas to engineer each car exactly to suit the customer's needs assures top performance, while attention to manufacturing detail assures dependability.

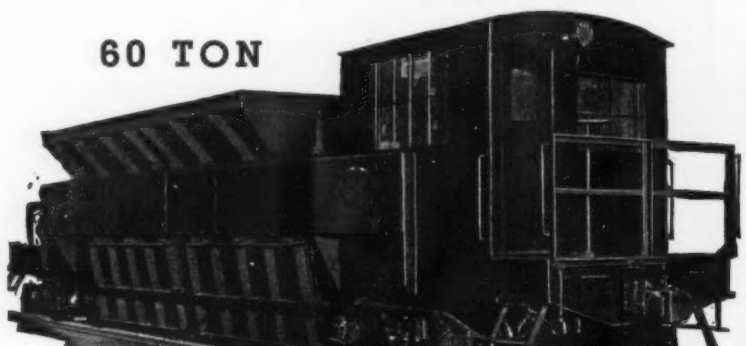
20 TON SCALE CAR



DOUBLE HOPPER BOTTOM DUMP

Car has Atlas underslung suspension scales with Atlas 24" Scale Dial with chart recording. Air brakes and air-operated discharge gates. Cast steel side frame trucks with roller bearings.

60 TON



SIDE DUMP ORE TRANSFER

900 cu. ft. capacity, two-section hopper with electric heaters. Each section has independently-operated discharge gates. Car is equipped with air brakes, automatic couplers, headlights and whistle. Each truck mounts one 75-H.P. motor.

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THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

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—Technical Briefs—

Lithium:

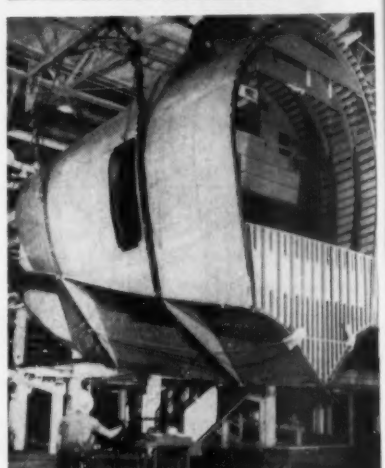
Recoveries to 97.3 pct of lithium in ores reported in process.

A process for extracting lithium sulfate from two of its four major sources simultaneously has been developed by the U. S. Bureau of Mines.

Lithium, its alloys, and its salts have become increasingly important as industrial materials. Weight of the silvery-white metal, by volume, is about 60 pct that of water. It has a variety of uses, ranging from purifying helium gas by removing the nitrogen to scavenging molten metals of undesirable impurities as well as in welding aluminum.

Recoveries to 97.3 Pct.—The new process yielded recoveries ranging from 66.7 pct to 97.3 pct of the lithium in the ore mixtures. A single set of conditions was determined under which good recoveries of lithium could be obtained from either of the two minerals and mixtures of them.

A free copy of *"Recovery of Lithium from Spodumene-Amblygonite Mixtures,"* by L. H. Kalenowski and S. M. Runke, may be obtained from the Bureau of Mines, Publications Distribution Section, 4800 Forbes St., Pittsburgh 13, Pa.



NOSE SECTION of Navy's new turboprop flying boat is launched from Consolidated Vultee Aircraft Corp.'s giant construction jig in San Diego, Calif. The 80-ton R3Y, production version of the Convair XP5Y-1, is world's first turboprop seaplane. Top speed: 350 mph plus.

Turn to Page 156

HIGH SPEED STEEL TOOL BITS . . .

Ready Made

These bits give you convenience economy, dependability

AVAILABLE in a COMPLETE RANGE of TUNGSTEN and "MOLY" Types:

SUPER PANTHER, PANTHER SPECIAL, ML, LXX, SUPER DBL and DBL-2

Pocket Price List NOW READY!

Just send a postal-card request—giving name, position, company, and address. Ask for "A-L Tool Bit Price List," pocket edition. While you're writing, also include the illustrated four-page folder, "A-L Mill Treated High Speed Steel Tool Holder Bits." Yours for the asking.

Write Today

ADDRESS DEPT. A-29

These better tool bits, packed in the famous blue-and-gold boxes, are immediately available in standard sizes from stocks located at 28 convenient points throughout the country.

Ready Made—this means that bits are: (1) already cut to correct lengths, with clearance bevel at both ends; (2) already heat treated uniformly by mill experts; (3) furnished with either regular finish or ground finish; (4) inspected individually for hardness, size, and surface. "Finish-ground" bits are extremely accurate in dimension, entirely free from decarburization and scale, and ready for instant use upon grinding the cutting point to desired shape.

With six popular grades to choose from, you can cover a wide range of cutting needs by specifying these tool bits. Our informational service will be useful to you in selecting grades. Call A-L, or an A-L distributor.

● *Allegheny Ludlum Steel Corporation, Henry W. Oliver Bldg., Pittsburgh 22, Pa.*

For complete **MODERN** Tooling, call

Allegheny Ludlum

W&D 3892

AL FINE TOOL STEELS SINCE 1854

THOMAS *Flexible* ALL METAL COUPLINGS

FOR POWER TRANSMISSION • REQUIRE NO MAINTENANCE

Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

Thomas Couplings have a wide range of speeds, horsepower and shaft sizes: ½ to 40,000 HP — 1 to 30,000 RPM.

Specialists on Couplings for more than 30 years

PATENTED FLEXIBLE DISC RINGS

BACKLASH FRICTION WEAR and CROSS-PULL are eliminated LUBRICATION IS NOT REQUIRED!

THE THOMAS PRINCIPLE GUARANTEES PERFECT BALANCE UNDER ALL CONDITIONS OF MISALIGNMENT.

• • •

NO MAINTENANCE PROBLEMS.

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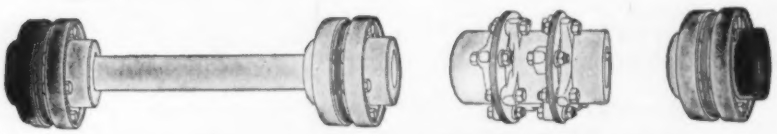
ALL PARTS ARE SOLIDLY BOLTED TOGETHER.



Write for the latest reprint of our Engineering Catalog.

THOMAS FLEXIBLE COUPLING CO.
WARREN, PENNSYLVANIA

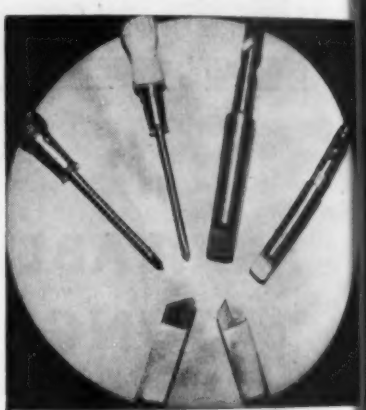
Small Tools:

Chrysler cuts costs by reworking worn tools to new specifications.

Reconditioning of more than 100,000 factory tools during the past year has helped Chrysler Corp. cut costs and conserve needed metals. Useful life of many tools has been extended several times beyond normal.

Operation of the company's non-productive material control department has brought about important tool savings. Worn-out screw drivers, obsolete drills and thousands of other tools that have completed their usefulness on production lines are routed to the long rows of bins in the department.

Some Reissued—Some tools are reworked to new specifications. Others are reissued to other departments of the company where



SIMPLE TOOLS such as screw drivers and drills can be salvaged economically. Parts shown were taken from storage bins and refinished like new. Simple recutting can often refit cutting tools for new jobs.

they can still be used effectively. Still others are sold to Chrysler suppliers who can use them in their operations, and, finally, those that cannot be repaired or reclaimed are sold for scrap metal—788,000 lb last year.

Last year 70,000 separate items were supplied to plants from obsolete tool stores or surplus stocks held by other plants, and another 3,600 were reworked to fit new specifications. In one operation 24,000 grinding wheels were reworked.

Turn to Page 160

if you're casting around for special steels...

Try Crucible Warehouse service. You're sure to find the special steel you're trying to land. And our stocks of Rex High Speed tool steels are *immediately* available from the Crucible Warehouse nearest you.

Then too, you can get nearly all of our more than 400 specialty steels from your Crucible warehouse.

When you're up against it for special purpose steels, try Crucible first. Crucible warehouses are strategically-located across the country to give you fast, dependable service.

Stocks maintained of:
Rex High Speed Steel . . . ALL grades of Tool Steel (including Die Casting and Plastic Die Steel, Drill Rod, Tool Bits and Hollow Drill Steel) . . . Stainless Steel (Sheets, Bars, Wire, Billets, Electrodes) . . . AISI Alloy, Max-el Machinery, Onyx Spring and Special Purpose Steels.

CRUCIBLE first name in special purpose steels

52 *years of* *Fine* *steelmaking* **WAREHOUSE SERVICE**

CRUCIBLE STEEL COMPANY OF AMERICA, GENERAL SALES OFFICES, OLIVER BUILDING, PITTSBURGH, PA.

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Angier

How Vapor from Paper Stops Rust of Parts in Storage

Problem: To find a simple way to keep sewing machine attachments bright and shiny in a plant atmosphere that accelerates corrosion for two reasons. (1) Certain manufacturing operations create acid fumes and (2) the plant is located at the ocean's edge.

Solution: The firm discovered the chemical coated paper that gives off a vapor to stop rust—Angier VPI* Wrap. The paper is used simply as a liner for drawers (see photo), for trays, boxes or bins—or as envelopes. The vapor permeates the area in the container and robs aid and moisture of its rust-making powers. Now the shiny machine attachments stay bright for months at a time. No refinishing is necessary for these VPI-stored parts in process or for completed parts that are ready to ship.

To get "VPI Facts", check below the products stored or shipped by you. Send today to the most experienced name in vapor rust preventives—Angier Corporation, Framingham 10, Mass.

☐ Machinery-Industrial, Metal Working, Farm, Office, Construction.
☐ Steel in process of fabrication.
☐ Electrical Machinery, Appliances, Products.
☐ Instruments and clocks.
☐ Fabricated Products—Cutlery, Hardware, etc.
☐ Ordnance Equipment.
☐ Transportation Equipment—Aircraft, Auto, Naval, Railroad, etc
☐ Others:

Angier VPI* Wrap

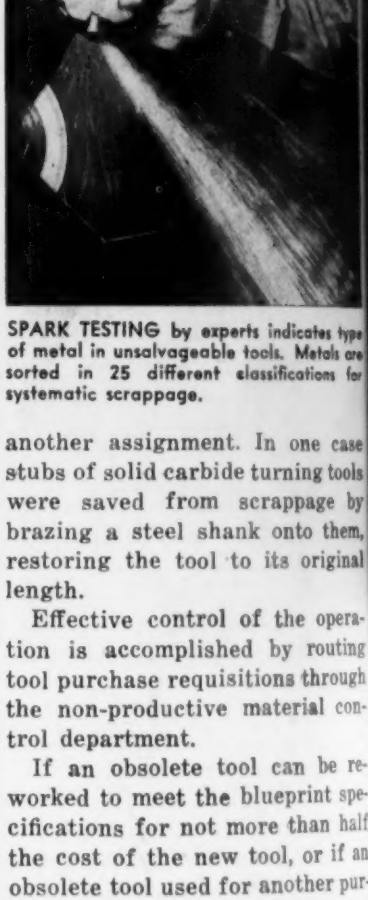
The PROVEN Vapor Rust Preventive

* (R) Vapor Rust Preventive

Distributors of Angier Industrial Papers in All Principal Cities

and many old tools were sold to Chrysler vendors.

Save Carbide Stubs—One example is the 9/16-in. drill which is reworked to ½ in. to meet new specifications, or an old drill worn too short for its present job which is sharpened and used again on



SPARK TESTING by experts indicates type of metal in unsalvageable tools. Metals are sorted in 25 different classifications for systematic scrappage.

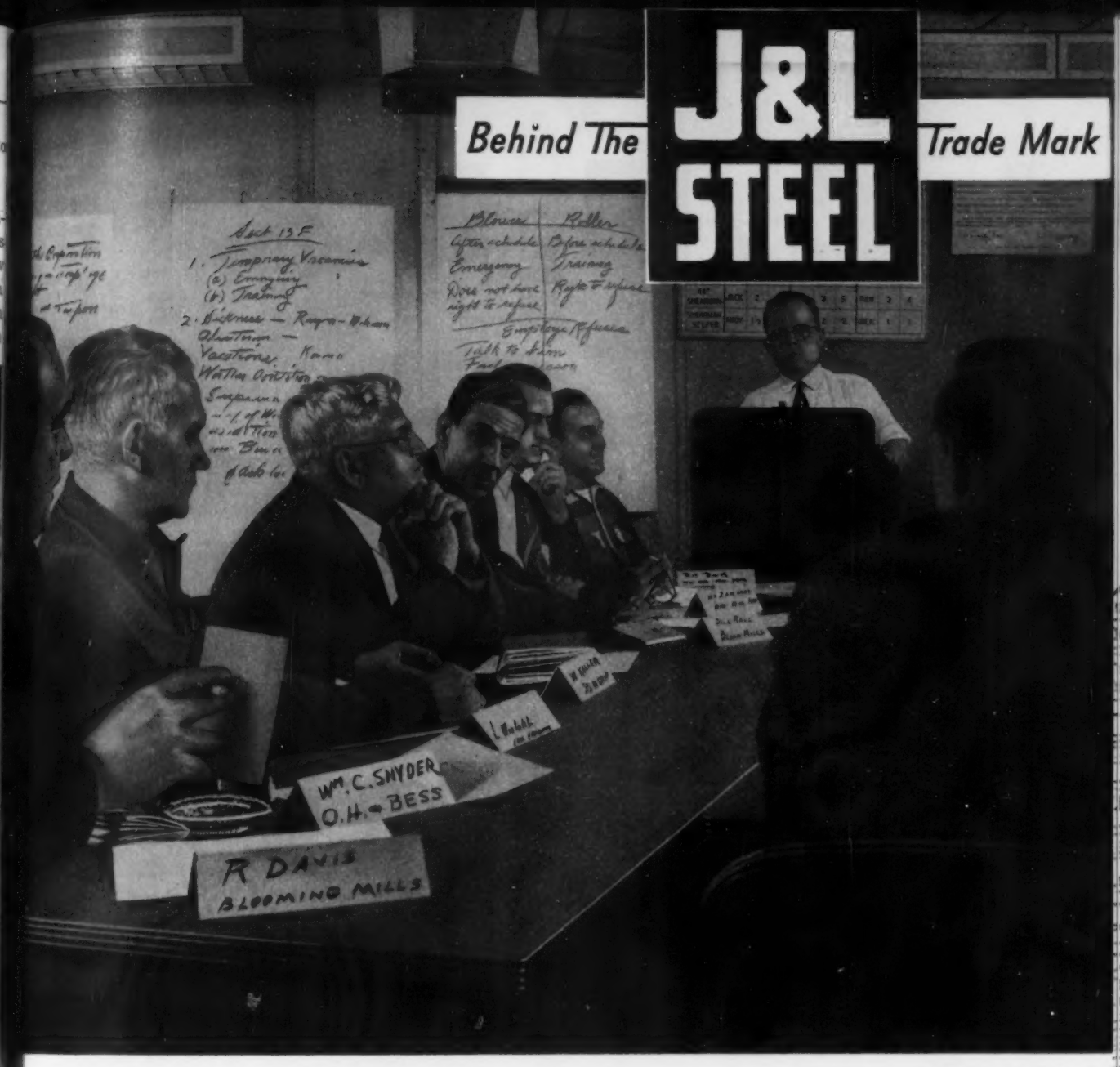
another assignment. In one case stubs of solid carbide turning tools were saved from scrappage by brazing a steel shank onto them, restoring the tool to its original length.

Effective control of the operation is accomplished by routing tool purchase requisitions through the non-productive material control department.

If an obsolete tool can be reworked to meet the blueprint specifications for not more than half the cost of the new tool, or if an obsolete tool used for another purpose will fit the new job, it is supplied to the requesting plant.

Checks Pipelines for Answers

Problems of pipeline flow and pressure loss can be answered by an electronic-mechanical analyzer installed by Midwest Research Institute of Kansas City, Mo. The McIlroy analyzer quickly answers problems once solved by trial and error methods.



photograph by d'Arazien

MANPOWER and KNOWLEDGE . . .

two principal ingredients of J&L steel

MEN make steel. No mistake about it, muscle and brains are used a-plenty in the myriad processes from ore to ingot to finished products of Controlled Quality J&L Steel.

In the old days steel was as good or as bad as the iron-master's skill. Now, because improved equipment and technical knowledge have taken out guesswork, you get uniform performance from J&L steel, order after order, day after day. But there's more to steel-making than machines and technical knowledge. And there's more to a man than muscle and brains.

J&L's management knows that. That's why these J&L supervisors who have come right off their jobs in the mills are meeting.

This particular discussion was not for the purpose of exchanging knowledge about steel, though that is done, too, at the proper times. These men, under the guidance of a skilled conference leader, have come together to learn how to help solve the human problems that come up on the job every day.

It is only one of the groups of J&L men who meet regularly to learn more about economics, human relations, and why the J&L management does things in a particular way.

This sharing of knowledge and experience, understanding, and teamwork among steelmen—is just one of the activities going on behind the J&L trademark, all directed toward one end—better steel for you.

JONES & LAUGHLIN STEEL CORPORATION

PITTSBURGH 30, PA.

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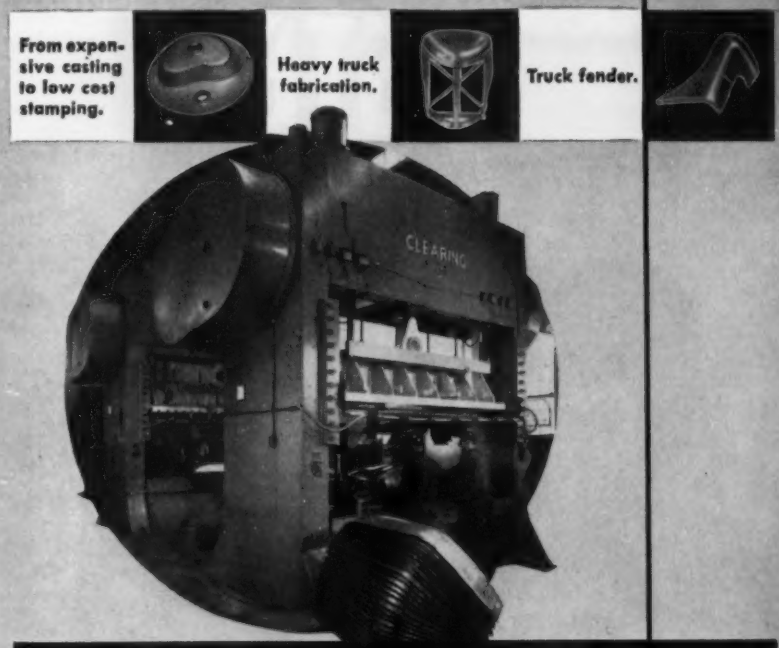

NO GAME OF CHANCE . . .

Getting the best from presses is an operator's stock in trade in the contract stamping business. Competition is keen, and successful old timers, like Briskin Mfg. Co., Chicago, didn't get that way without a great deal of production skill.

Briskin put their money on Clearing presses because Clearings gave them the maximum quality, economy, on-schedule production and minimum waste that are the watchwords of Briskin production. Die regrinds are few and far between and maintenance costs are lower, too.

Where competition is tough and economical production means a winning hand, Clearing presses are dependable assets. Looking at results is a good way to choose *your* press equipment too! For production, your best choice is Clearing.

CLEARING MACHINE CORPORATION

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HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES

THE WAY TO EFFICIENT MASS PRODUCTION

—Technical Briefs—

Cast Big Stainless Blades

Stainless steel blades recently cast for four Kaplan adjustable-blade turbines by Baldwin-Lima-Hamilton Corp. are reported among the largest made to date.

Having a capacity of 33,500 horsepower at 166.7 rpm and 98-ft head, the four turbines will be installed in two plants of the Nangal Hydroelectric Project in East Punjab, India. Ultimate capacity will be three units in each plant, in a combined irrigation and hydroelectric project built around the proposed Bhakra Dam.

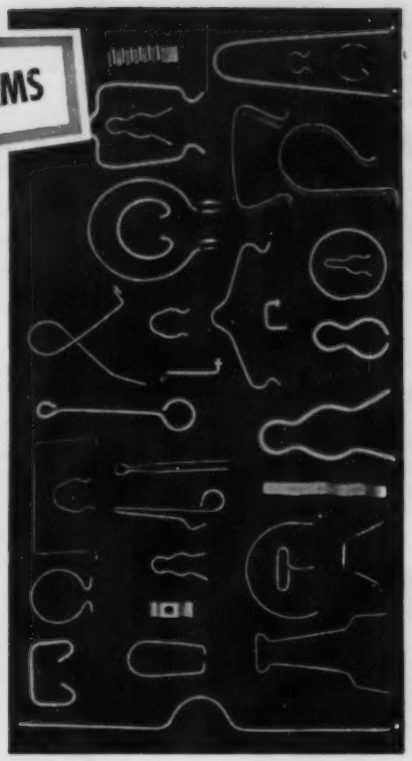
TURBINE BLADE, of cast stainless steel, is machined at plant of Baldwin-Lima-Hamilton Corp. Turbine is being built for hydroelectric project, East Punjab, India.

To prevent work hardening of the stainless steel from dirt particles, which might become embedded in the bearing, the blade trunnions are being machined undersize to fit sleeves of different metal. The sleeves will then serve as journals in the hub bearings.

"Oh, we have our exciting moments around here — why only last week somebody dropped in with a piece of scrap iron."

Turn to Page 166

WIRE FORMS



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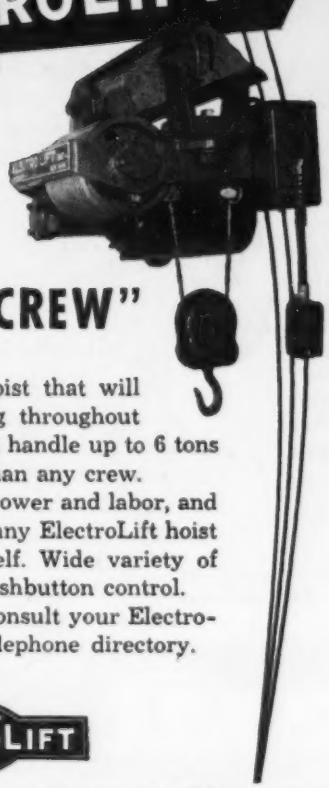

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"ONE MAN CREW"

Here's a worm drive hoist that will speed materials handling throughout your plant. *One man* can handle up to 6 tons faster and more safely than any crew.

With savings in time, power and labor, and prevention of accidents, any ElectroLift hoist will quickly pay for itself. Wide variety of models, with optional pushbutton control.

For further features, consult your ElectroLift representative in telephone directory.

ELECTROLIFT

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IT'S YOURS—FREE

IT SUMMARIZES THE LATEST ADVANCES IN MODERN CLEANING & PROCESSING FOR THE METAL INDUSTRIES —THE FOLLOWING ARE A FEW EXAMPLES:

How to get fine-grain phosphatizing in one to two minutes, without stainless steel equipment, rinsing or chromic acid dips . . . using KELITE KEYKOTE.

How to remove heat treat scale by simple immersion . . . using KELITE SCALE-OFF.

How to remove grease and carbon . . . from any metal . . . by immersion at room temperature in an odorless, non-inflammable, non-phenolic liquid . . . KELITE FORMULA 555.

How to prepare diecast parts for plating . . . eliminating "spotting out" . . . by direct and reverse current . . . with KELITE FORMULA 45.

How to remove fibre greases and polymerized oils from steel . . . by hot tank immersion . . . in as little as four hours . . . using heavy-duty KELITE HD7.

How to handle 23 other difficult cleaning or processing jobs with literally hundreds of applications in every phase of the metal finishing and metal working industries.

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KELITE

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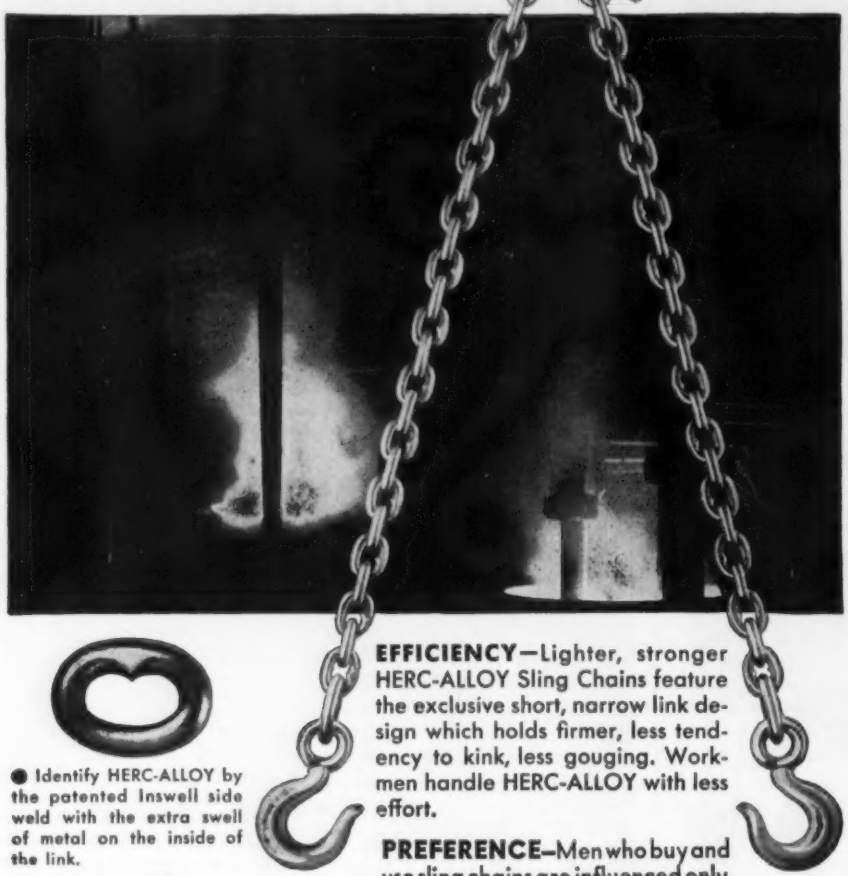
HERC-ALLOY

SLING CHAINS

STRENGTH—Size for size, no other sling chain offers a greater tensile strength. HERC-ALLOY will not crystallize—never requires annealing.

SAFETY—HERC-ALLOY Sling Chains are made to your specifications. Every new sling carries a written guarantee, is registered and tested before shipping. This registration serial number is carried at the top link.

● Serial number permanently affixed near top link for positive identification.



● Identify HERC-ALLOY by the patented Inswell side weld with the extra swell of metal on the inside of the link.

EFFICIENCY—Lighter, stronger HERC-ALLOY Sling Chains feature the exclusive short, narrow link design which holds firmer, less tendency to kink, less gouging. Workmen handle HERC-ALLOY with less effort.

PREFERENCE—Men who buy and use sling chains are influenced only by facts learned through experience. HERC-ALLOY Sling Chain preference has been built up over the years, not just by what we say, but by how HERC-ALLOY performs on the job.

Write for Data Book No. 3 which contains much useful manufacturing and application information on HERC-ALLOY Sling Chains.

COLUMBUS McKINNON CHAIN CORPORATION

(Affiliated with Chisholm-Moore Hoist Corp.)

GENERAL OFFICES AND FACTORIES: TONAWANDA, N. Y.

***District Offices:* New York • Chicago • Cleveland**

Other Factories at Angola, N. Y., Dixon, Ill., St. Catharines, Ont., and Johannesburg, South Africa.

—Technical Briefs—

Mining:

Gravity helps boost nickel output from Canadian mines.

Gravity has been put to work deep beneath the earth's surface to help maintain nickel output. The method has given mining science the key to recovery of millions of tons of nickel-copper ore once regarded as worthless.

Engineers of The International Nickel Co. of Canada Ltd., at its mines in the Sudbury District, recently adapted a technique by which gigantic masses of underground ore are induced to cave and disintegrate of their own weight.

Lower Grade Ores—Called "induced caving," this low-cost bulk mining method, plus metallurgical practices, makes it practicable to recover and treat ore lower in grade than previously worked in underground mining.

In caving, a slice which may contain as much as 1½ million tons of ore is undercut. As ore from the undercut slice is withdrawn, the slice to be mined breaks away and starts to disintegrate as it moves downward, the weight of the upper part of the mass acting to crush the ore at the bottom.

Another bulk mining technique being used is the blasthole method. Blasthole mining differs from caving only insofar as explosives are used to break the slices of harder, tougher ore from the solid material. The force of gravity then takes over, as in caving.

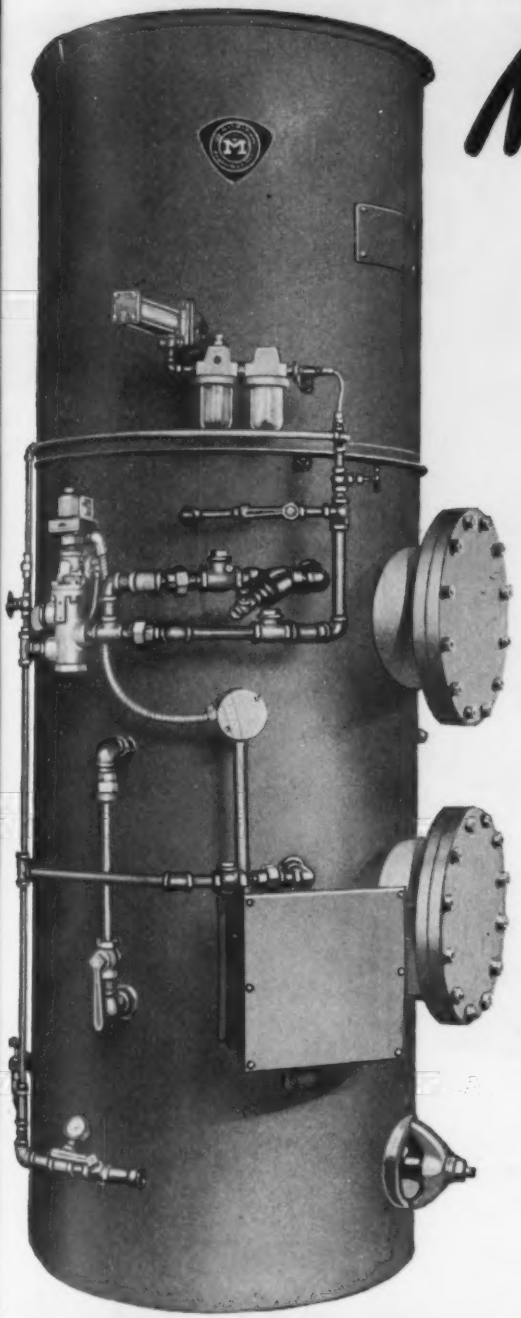
AEC Releases Patents to Public

Descriptions of 24 patents owned by the U. S. Government and held by the Atomic Energy Commission have been transmitted to the U. S. Patent Office for registry and listing in the official register of patents.

The Commission will grant nonexclusive, royalty-free licenses on the listed patents, as part of its program to make non-secret technological information available for use by industry. Commission-held patents and patent applications released for licensing now total 419.

MACLEOD ABRASIVE BLAST EQUIPMENT

EST 1897



NEW! The Completely Automatic

MACLEOD "AUTO-BLAST" ABRASIVE BLAST CLEANING MACHINE

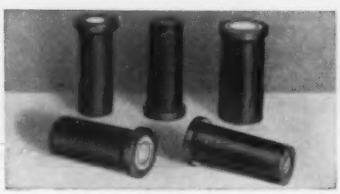
Self-Contained..Large Capacity..Can Give 24-Hours-A-Day Continuous Blasting If Required

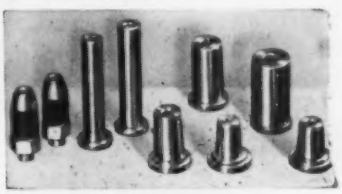
A completely new Macleod engineering development. A double-chamber blast cleaning machine with a continuous blasting cycle—no shutdown time for reloading. The Macleod "Auto-Blast" is foolproof . . . requires no operator at the machine.

The refilling cycle is entirely automatic and does not depend on outside sources—such as a synchronized timing device, or motor-driven pumps or valves. The automatic cycle unit is built into the machine and is not influenced by the type or rate-of-flow of the abrasive. No interchangeable abrasive controls are required and the number and diameter of nozzles is no problem.

The Macleod "Auto-Blast" machine can be used with rooms, tables, barrels, or special automatic devices.

ENGINEERS M MANUFACTURERS





MACLEOD BLAST CLEANING NOZZLES

Available in both Norbide (750 hours minimum service guaranteed) and Borium (300 hours minimum service guaranteed). Both types give longer service, decrease air consumption, and give better stream contour and abrasive velocity compared with iron nozzles.

Write for additional information or send specifications for estimate.

The MACLEOD Company

2236 BOGEN ST. CINCINNATI 22, OHIO, U.S.A. ESTABLISHED 1897

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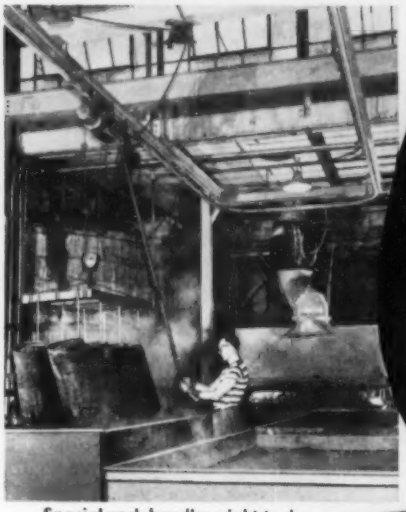
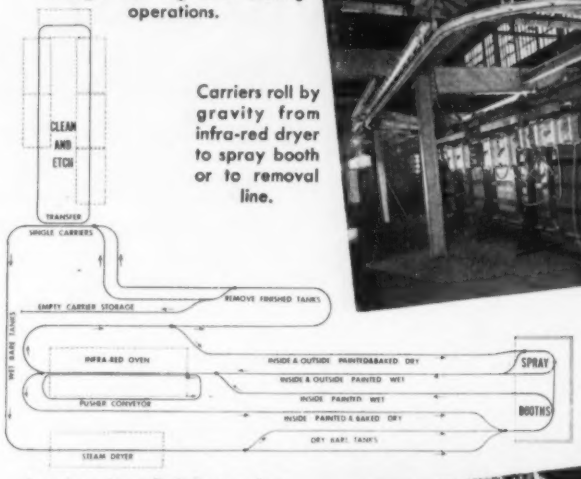


PERMUTIT "Softens" THEIR HANDLING JOBS, TOO

Special rack handles eight tanks through cleaning and etching operations.

Carriers roll by gravity from infra-red dryer to spray booth or to removal line.



American MonoRail System for finishing water conditioner tanks at the Permutit Co., Birmingham, N. J.

Finished tanks from spray booths (rear) roll to pusher conveyor in foreground.

This installation in the Permutit Company again demonstrates the versatility of American MonoRail engineering and overhead handling equipment. Every step from cleaning and etching to finished painted tank is done by a continuous "flow" operation. The system boosted production, cut handling labor, improved space utilization, reduced material damage, bettered working conditions and improved production control.

American MonoRail engineers can show you how to increase production and lower costs in your plant. Just drop us a line.

SEND FOR BULLETIN C-1.

THE AMERICAN MONORAIL COMPANY

13103 ATHENS AVENUE ● CLEVELAND 7, OHIO

—Technical Briefs—

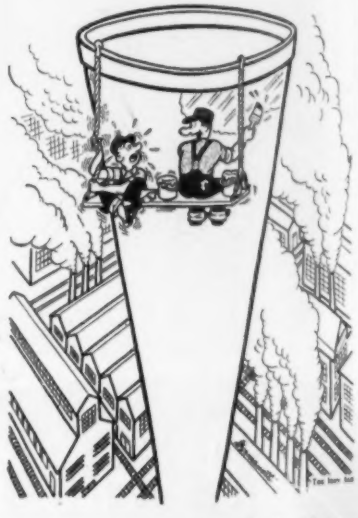
Mower Parts Cleaned Faster

A casting-cleaning room bottleneck has been eliminated at Eclipse Lawn Mower Co., Prophetstown, Ill., by installing a rotating-table, blast cleaning unit employing centrifugally - hurled abrasives.

SIX ROTATING WHEELS mounted on 9-ft diam table speeds cleaning of lawn mower parts at Eclipse Lawn Mower Co.

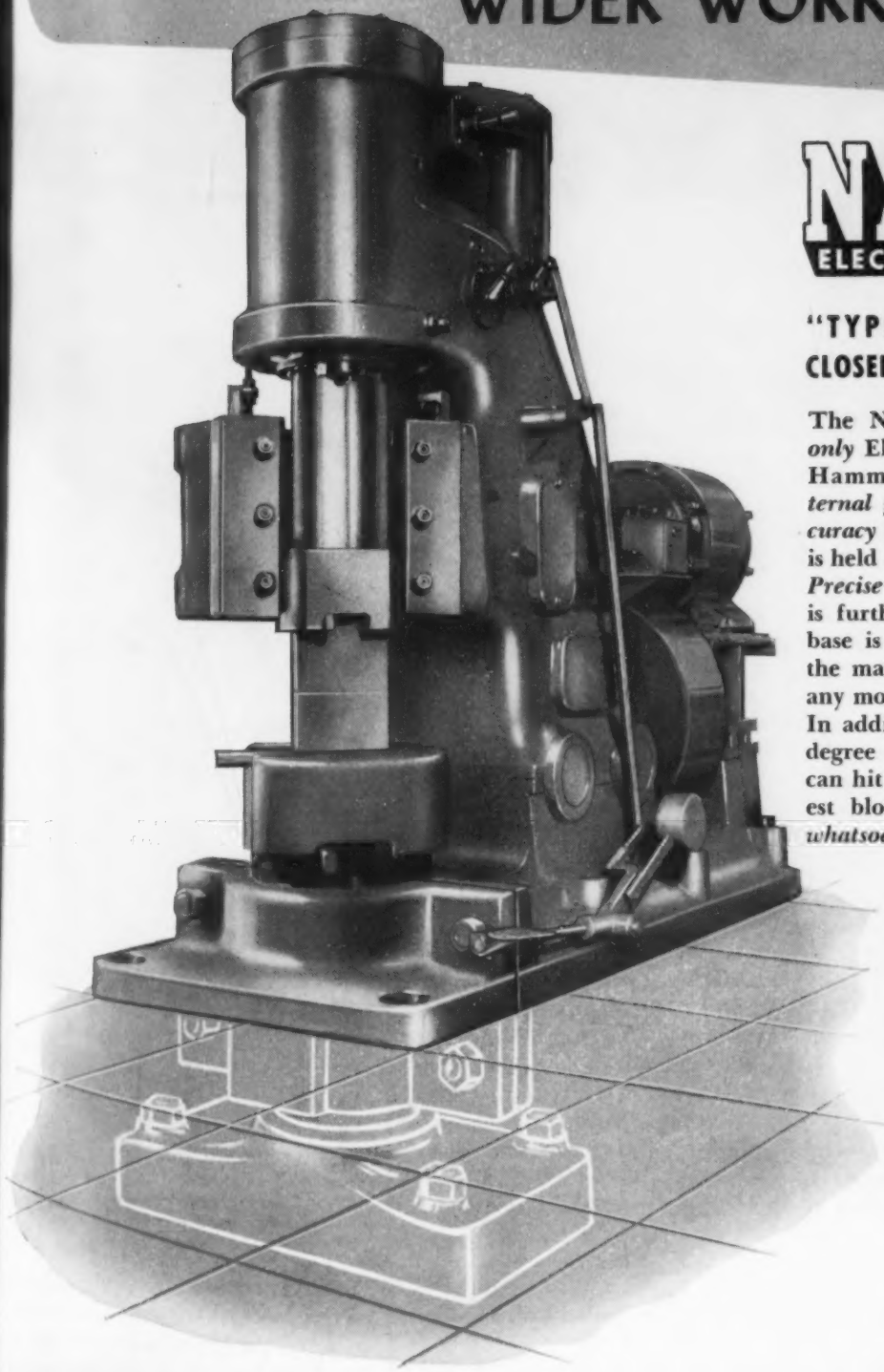
The unit cleans 3000 lawn mower parts during each 4-hour shift. It reduces, by 29 man-hours, the cleaning time previously required with its old tumbling mill and air blast barrel.

Made by Pangborn Corp., Hagerstown, Md., the table is operated by two workmen. In 4 hours two men clean 800 lawn mower wheels, 1200 side plates, and 400 cutter bars. The 9-ft diam rotating table carries six 36-in. tables that rotate on their axes.



"Look, Al, it's been six months like this now. Maybe the work ain't congenial for you."

Extreme Accuracy—
WIDER WORK RANGE



NAZEL
ELECTRO-PNEUMATIC

"TYPE I" HAMMER FOR CLOSED or OPEN DIE WORK

The NAZEL "Type I" is the *only* Electro-Pneumatic Forging Hammer with adjustable *external guides . . . increased accuracy* is assured since the ram is held tight within these guides. *Precise alignment at all times* is further assured, because the base is machined to *exactly fit* the machined anvil, preventing any movement of the lower die. In addition, due to the minute degree of control, the NAZEL can hit the hardest or the lightest blow *with no adjustments whatsoever.*

FREE—Write for your copy of our helpful Forging Hammers Bulletin, today!

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Specialists in Industrial Cleaning Products

Zorball—another helpful Wyandotte Chemicals product at work

Only ZORBALL (of all absorbents) brings you these extra benefits

IMAGINE the lasting safety, reduced cost and improved "housekeeping" that will come your way with these three outstanding features of all-purpose Wyandotte ZORBALL:

First, ZORBALL (a *different* absorbent made only by Wyandotte) does not cake or break down to dust. Nor can it be tracked all over your plant.

Lasts longer, cuts costs

Second, ZORBALL continues to be skidproof even after absorbing saturation quantities of oil, paints, fats, chemicals or water. This continued effectiveness means longer-lasting protection against slipping and skidding accidents.

Third, ZORBALL can be swept up easily, in just half the time it takes to sweep or scrape away absorbing materials that become soft, sticky, greasy. And, after drying out, it can often be used over again!

Ask your Wyandotte representative to show you how **Zorball keeps floors safe longer . . . and reduces absorbent costs.** He will also give you information about other Wyandotte products designed for better cleaning and maintenance. *Wyandotte Chemicals Corporation, Wyandotte, Michigan; also Los Angeles 54, California.*

CLEANING THE WORLD

Largest manufacturers of specialized cleaning products for business and industry

Wyandotte CHEMICALS

Helpful service representatives in 138 cities in the United States and Canada

—Technical Briefs—

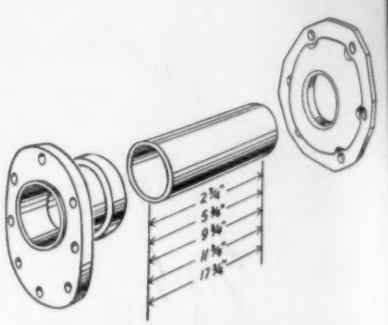
Steel Castings:

Savings in production costs and materials possible by redesign.

Engineering teamwork on correct production design is paying off in lower costs and higher production for steel foundries and their customers in more than 100 heavy industries.

Growing out of the research and development program of the Steel Founders' Society of America, increased emphasis has been placed on design-production teamwork as the key to foundry engineering advances.

CAST STEEL tractor drive spacer, required in five sizes, were expensive to produce, used too much scarce metal, were too heavy.

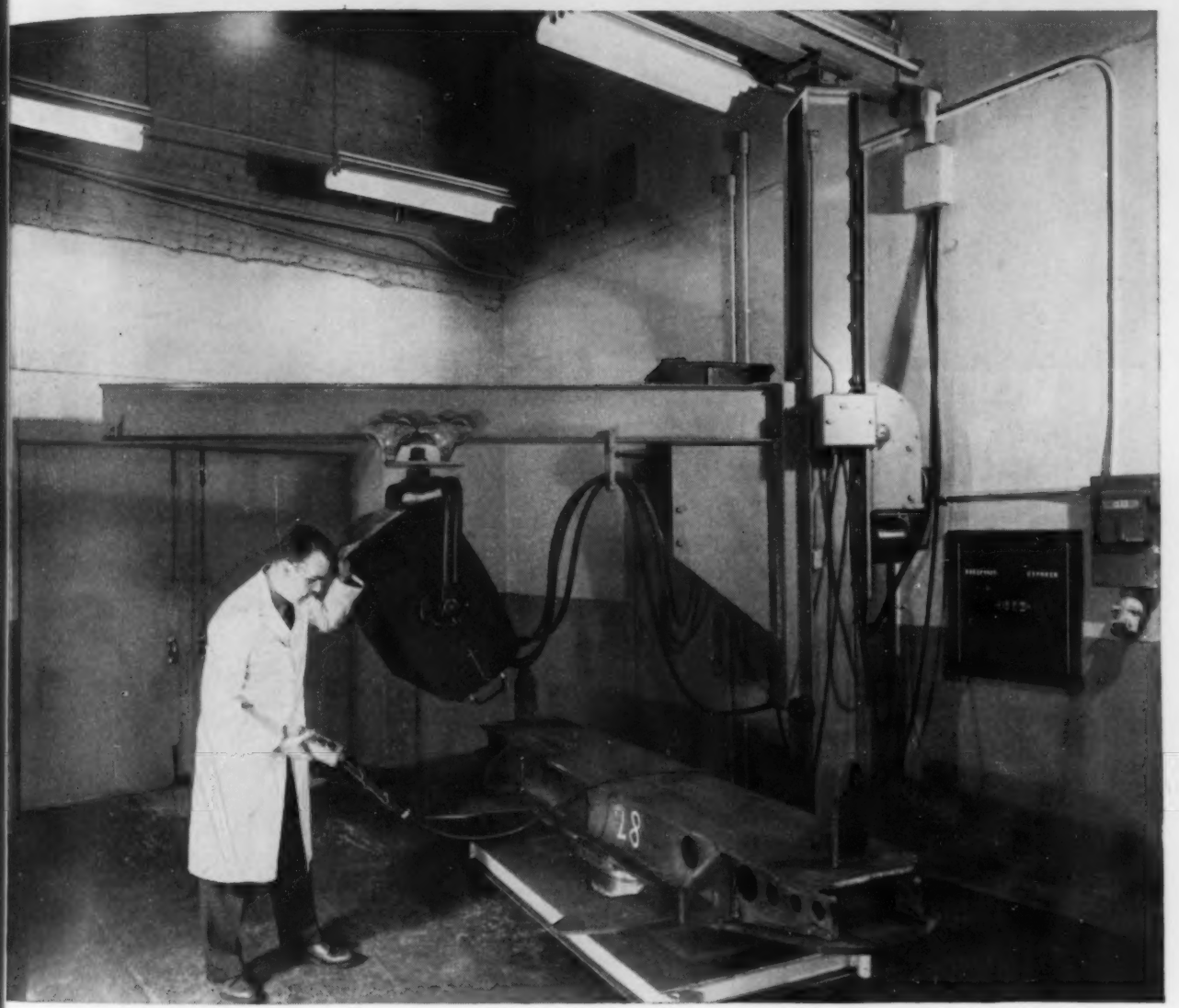


CAST-WELD construction was featured in redesigned spacer. Two low cost machined castings were joined with steel tubing cut to size. Costs were cut, metal saved.

Savings Possible — Typical of savings possible is the production of a tractor drive spacer produced by Superior Steel & Malleable Castings Co., Benton Harbor, Mich.

As originally designed to meet five different size requirements, the drive spacer units were expen-

Here's PROOF that X-Ray cuts costs, speeds production



Scores of industries use non-destructive x-ray inspection to lower costs, speed production, improve products. Here are just a few typical* reports:

"Examination of one type of crankshaft showed lack of fusion at the chill . . . pointed the way to saving $250,000 on a year's production."

"It is estimated that on two jobs alone the foundry saved over $13,000 and added to its prestige by delivering castings in which the customers could have utmost confidence."

"Through the use of x-ray, risers have been added, relocated, reduced and even eliminated on many patterns, which in turn has made it possible to produce better castings at lower cost."

"Radiography accounted for the salvaging monthly of $35,000 worth of parts, enabling the foundry to increase its yield and pass on a 20% saving."

"The only reliable way of detecting internal tears is by radiography. On a radiograph the internal hot tear will show branches emanating from the main crack."

The GE model OX-250 is by far the world's most popular industrial radiographic unit. With an operating range from 60 to 250 kvp, 2 to 10 ma, this versatile unit is available in seven different mountings to meet varied industrial needs.

Let one of General Electric's highly trained application specialists appraise your inspection needs. Ask for the new 28-page information book, Pub. 7A-3292, from X-Ray Department, General Electric Company, Milwaukee 14, Wisconsin, Rm. **AR5.**

*Names supplied on request.

GENERAL ELECTRIC

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Weldimatic means **Fully Automatic**

Loyalty to a Principle!

When the late Otis L. Smith founded Weldit, Inc., in 1918, he was determined that the basic policy of the new company would be to produce the finest precision welding products in the world. This policy throughout the years has become an inheritant part of every Weldit product. This loyalty to a principle has made Weldit torches synonymous with quality throughout industry.

Weldit *Weldimatic* torches will do a better job . . . faster . . . at less cost than any other torch.

Weldimatic natural action!
To light—squeeze, to shut off—release grip.

Illustrated, WELDIT Model W-46 *Weldimatic* Welding Torch.

Weldit INC. SINCE 1918

A limited number of Weldit Dealer franchises available.

992 OAKMAN BOULEVARD, DETROIT 6, MICHIGAN

CANADIAN DISTRIBUTORS—ALLOY METAL SALES—881 Bay St., Toronto 5, Ontario, Canada

ALLOY TROUBLE?

If you have missed the special Iron Age series of five articles on boron steel which appeared last July and August you may want to order a reprint.

A 30-page reprint booklet covers the following:

1. Boron steel alternates for standard grades. 2. Advantages and limitations of boron steels. 3. Hardenability charts. 4. Case studies of boron steel use in plants making gears . . . pinions . . . springs . . . bolts . . . axles.

A limited quantity of reprints is still available. Price 50¢ each.

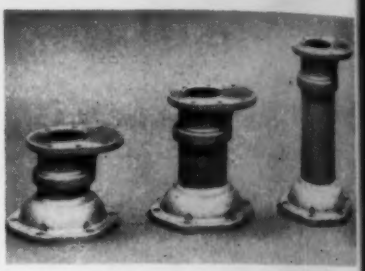
Address:
Reader Service Dept.

The Iron Age
100 East 42nd St., New York 17, N. Y.

sive to produce as one-piece steel castings.

Costly Method — Each size required a separate set of core boxes and pattern equipment, separate sets of flask equipment, expensive cleaning and handling, and separate machining set-up and jigs. Excessive amounts of critical steel were used.

Collaboration between customer and foundry engineers brought



COSTS WERE CUT with cast-weld construction by 38.4 pct, and 30 pct less steel was needed. Average weight was cut from 52.5 to 37.1 lb when parts were redesigned.

about design changes and agreement on use of cast-weld techniques.

Redesign — Redesign incorporated use of two simple machined steel castings plus one piece of pipe cut to required length and welded to the castings.

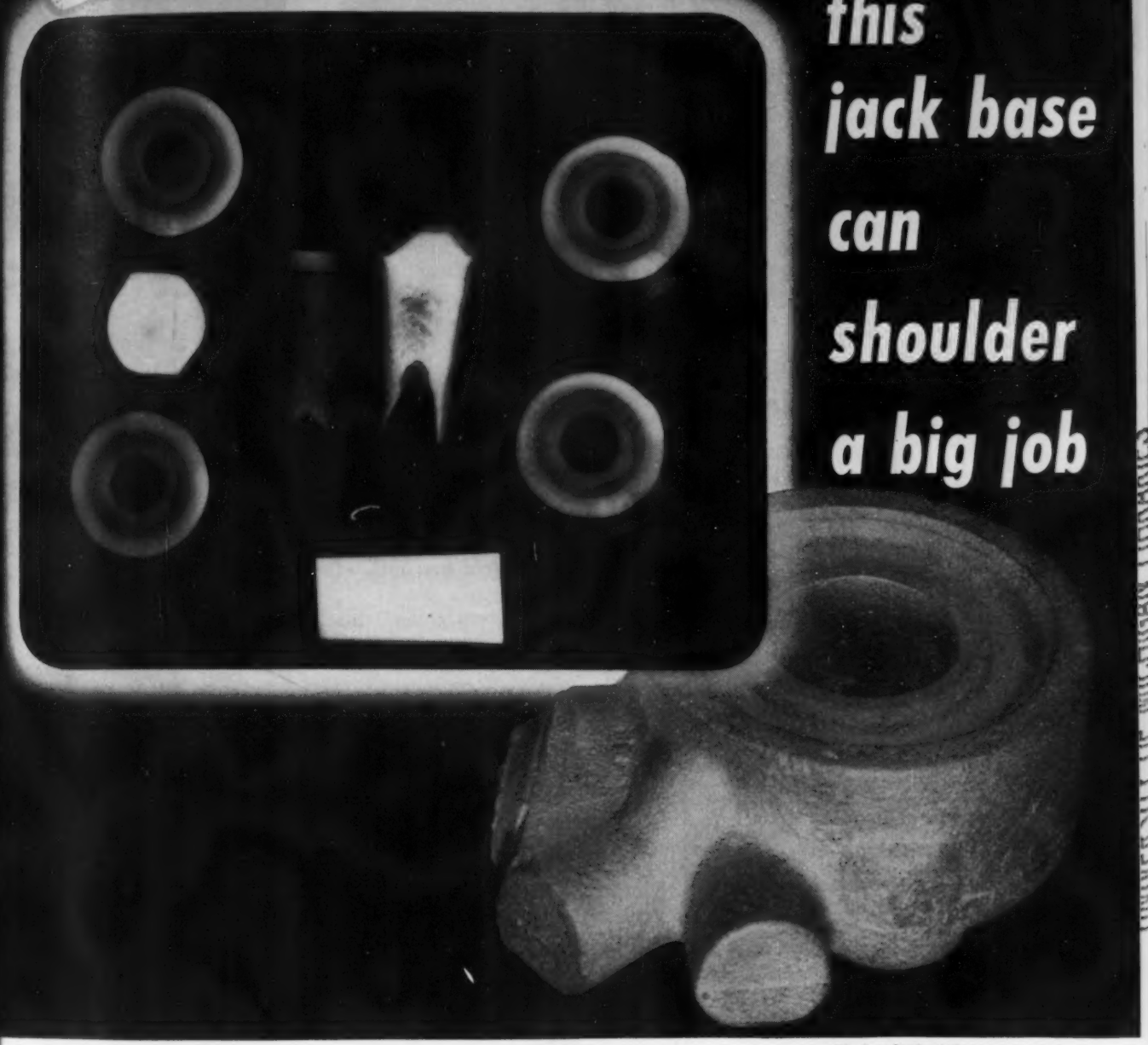
Tractor parts now are being produced in the five sizes at greatly reduced cost, plus valuable conservation of critical metal. Total cost of the part was reduced 38.4 pct, and 30 pct less steel was required.

Average weight was reduced to 37.1 lb from the original 52.5 lb.

"The fellows caught him cuttin' his lawn with an aluminum mower."

RADIOGRAPHY MAKES SURE

this jack base can shoulder a big job



Hydraulic jack bases—as cast.

Hydraulic jacks are born to lift loads many times their own weight and size—to stand internal pressures of thousands of pounds per square inch.

This takes sound castings—soundness which only radiography can prove without damage to the part. And the designers, knowing the casting will be sound, can count on strength without excessive weight.

Instances like this show why more and more foundries are making radiography routine. It is the way to be sure only high-quality castings are released.

If you would like to know how radiography can improve your plant operation, talk it over with your x-ray dealer. And, if you wish, we'll send you a free copy of "Radiography As A Foundry Tool."

EASTMAN KODAK COMPANY
X-ray Division, Rochester 4, New York

Radiography...

another important function of photography

Kodak
TRADE-MARK

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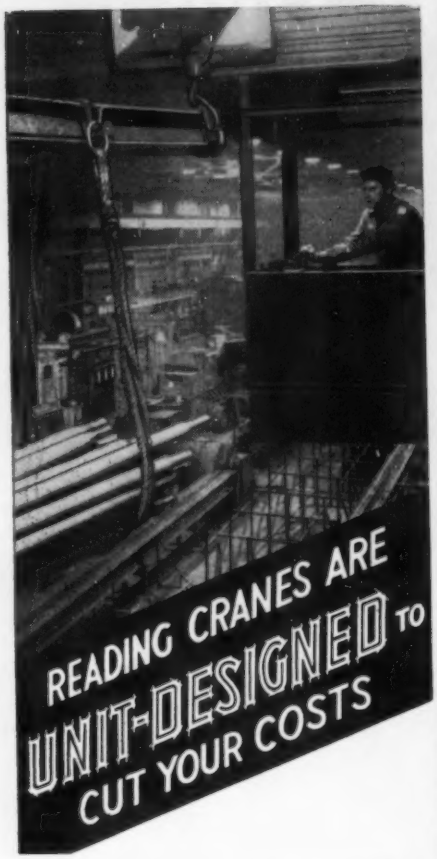

When you have a READING CRANE installed in your plant, you get a crane CUSTOM-BUILT to meet your specific materials handling operation—at no added engineering cost!

Known as UNIT DESIGN, this unique method of crane construction reduces your costs in 2 ways.

1. LOWERS FIRST COST — Because READING CRANES offer you a choice of several interchangeable motor, control and hoisting units, you buy no "extras" to solve special handling problems.

2. REDUCES MAINTENANCE COSTS —All of the operating parts in a READING CRANE are easily accessible for overhaul or repair. The UNIT DESIGN feature makes it possible to remove any one unit without expensive "breaking down" of other units.

See your distributor for information on how you can get a READING CRANE "tailor made" to your own specifications. Drop us a line for your free copy of "The Why and How of Faster Production."

READING CRANE & HOIST CORPORATION
2101 ADAMS ST., READING, PA.

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OVERHEAD TRAVELING CRANES

READING CRANES

Stretch-Flattener:

Unusual machine flattens integrally stiffened extruded aluminum.

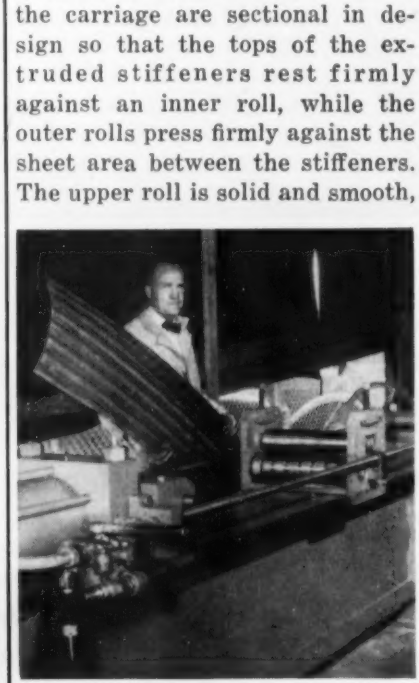
A new stretch-flattening machine which can flatten aluminum integrally stiffened tubular sections within flatness tolerances required for airframe sections has been developed by Longren Aircraft Co., of Torrance, Calif.

When the extruded sections are received in the Longren shops, they are first split longitudinally, roughly flattened, then heat treated.

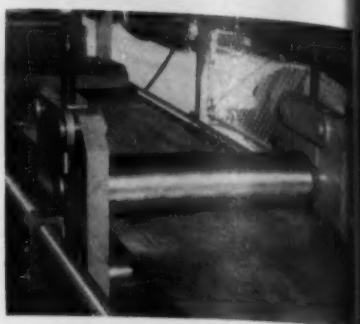
Spread Open—In flattening, the heat treated sections are end-mounted between mechanical V-clamps in the tension flattening machine. Using hydraulic pressure, the entire sheet is then placed under tension to a point just below the yield strength of the material.

After initial tensioning, the traveling carriage with three rigidly mounted displacement rolls starts along the sheet from the stationary jaw end. The movable chuck automatically takes up the slack of elongation and maintains even tension.

Sectional Rolls—Lower rolls of the carriage are sectional in design so that the tops of the extruded stiffeners rest firmly against an inner roll, while the outer rolls press firmly against the sheet area between the stiffeners. The upper roll is solid and smooth,



SLIT SECTION of integrally stiffened aluminum is shown after heat treat and before rolling and stretch.



ROLL-STRETCH FLATTENING is shown in action. Lower rolls are split to fit around stiffening sections.

and presses against what will be the external side of the flattened section.

As the carriage progresses along the sheet, the material feeds over the first lower roll, then angles slightly downward under the upper center roll. Beyond the upper center roll, it angles upward again, then reverts to the plane of tension between the end clamping jaws after leaving the last displacement roll.

Greatest Elongation — As the material passes under the center roll, greatest elongation takes place. At this point, the material is tensioned slightly beyond its yield point, and work hardening takes place. On passing the last displacement roll, the material stabilizes to a permanently flattened condition.

To further assure this passive condition, the angles of displacement through the rolls are carefully balanced out, thus assuring equal stress relief in both the sheet and the extruded stiffeners. After the sheets have been flattened to permissible tolerances, they can be contoured as desired using conventional stretch press equipment.

BCR Warns on Coal Catalysts

A warning against unproved claims for so-called combustion catalysts has been sounded by the Technical Advisory Board of the coal industry's Bituminous Coal Research, Inc. Claims that such catalysts reduce smoke, soot, ash and clinkers have not yet been supported by adequate engineering data, BCR says.

New Capacity Helping Gnaw Away at Backlogs

Industry's capacity has passed 110 million ton mark . . . Due to come at much faster pace . . . Expect very high operating rates if official ratings aren't revised soon.

Steelmaking capacity in the United States has passed the 110 million ton mark. Officially it is still listed at 108,587,670 net tons, a figure established at the first of the year. But since then enough new furnaces have been brought into production to bring actual capacity above 110 million tons per year.

From now on new facilities will be brought into production at an even faster clip. Expansion schedules—still possible of attainment—call for a capacity goal of 117 million net tons by the end of this year. This means expansion will have to average about a million tons per month for the rest of the year. The increase will be by spurts because new projects aren't brought into production gradually.

High Rate Possible—Actual capacity higher than its official rating has enabled the industry to bounce back to a high rate of operations quickly after the two recent shutdowns. Unless new official capacity ratings are soon established, some really phenomenal production rates will be reached. It is possible that the industry could find itself operating at some unheard of figure like 110 pct of rated capacity—an achievement which would undoubtedly make some people blink their eyes in disbelief.

Of course this terrific rate of expansion and production is bound to affect the steel market. Despite the loss of 2.5 million tons of production from the two short strikes, steel companies are gradually beginning to whittle away at order backlogs. Most firms have fewer orders on their books than they've had at any time since the latter half of 1950. Generally order backlogs of the big producers have declined only slightly. But a number of small and nonintegrated producers need business badly.

Tighter Again—Detroit has again become one of the tightest areas in the steel market. Buoyed by bigger production quotas and the removal of Regulation W, auto makers are again aggressive in their procurement. Though it may be temporary, steel buyers in Detroit are encountering market conditions similar to those which existed before the production cutbacks early this year.

Aside from sheets, other spot shortages are bringing rush emergency calls from plants. These indicate unbalanced inventories—a condition aggravated by the recent shutdowns. There is no easing on these items which are being gobbled up by defense; plates, bars, shapes, and forging billets. Critical supply is being taken for granted and planned on in advance.

Market Coasting—Elsewhere the market shows every sign of coasting. With certain painful exceptions, producers are booked nearly as far ahead as they'd like to be. And consumers generally aren't pressing for quick delivery. Though they are using plenty of steel, they act as if they expect more to be available when they need it. Little "third strike" hedging can be detected.

Plates in sizes over 1 in. are still in strong demand. But light plate production on continuous strip mills has taken the steam out of this market. A month ago plates under ¾ in. were the only ones available in fairly free supply. Now this figure has moved up to 1 in. The trend toward easing is from smaller sizes up.

Strong and Weak—Difference in grade means a lot in the amount of plates available. There is reason to believe that "mild" steel, as opposed to "quality" steel, plates will continue easier. This is true in light as well as heavy sizes.

Strong demand continues for heavy structurals, large diameter bars, rods, and oil country goods and line pipe. Inventories of hot-rolled sheets are large. The cold-rolled strip market is weak, with some non-integrated producers in the eastern area absorbing freight to compete in the Pittsburgh area.

There is no indication that the Supreme Court will soon rule on the steel seizure case. The court met on Monday and adjourned without acting on the case. Meanwhile, it was learned that National Production Authority is pressing some steel producers to deliver as much semi-finished steel as possible to other producers that wouldn't be affected by another union walkout.

Scrap Easier—The scrap market continues to ease. Cast grades in some areas are selling $10 or more below ceilings. Blast furnace grades are extremely shaky. Mills are insisting on premium quality in steelmaking grades—and getting it.

Steelmaking operations this week are scheduled at 101.5 pct of rated capacity, up half a point from last week's revised ingot operating rate.

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DON'T WAIT... COOPERATE!

The U.S. Needs Your Steel Scrap, Now

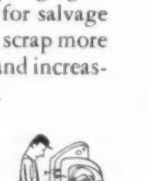
NEW Identification Chart Helps Stainless Steel Users 3 Ways . . .

1

Separating Stainless Scrap: Use this chart to quickly segregate Stainless steel scrap for salvage . . . thus making the scrap more usable for industry, and increasing its value to you.

2

"Unscrambling" Mixed Stainless Stocks: The chart can help you save time getting Stainless stocks in order and reduce the danger of your men using the wrong Stainless for the job.



3

Preventing Trouble On The Job: If there is reasonable doubt as to the identity of the steel, use the chart before starting a job to double-check the type of Stainless to prevent troubles that could be caused by wrong treatment in fabrication.

Any user of Stainless steels will find this new Carpenter Identification Chart can save time, money and shop headaches by providing a quick method for identifying Stainless steels. The chart tells how to prepare the samples . . . then diagrams and explains fully how to use each of eleven different tests for identifying various Stainless types. Typical reactions are given for the nitric acid, magnet, spark, hardness, muriatic acid, sulphur spot, nickel spot and stabilization tests. Measuring 11″ x 22″, the chart is convenient to use right on the testing table. Carpenter offers this handy chart free to Stainless steel users. No obligation . . . just drop us a line on your Company letterhead. THE CARPENTER STEEL CO., 121 W. Bern St., Reading, Pa.

It is assumed that the operator making the tests described in this Identification Chart will have some technical knowledge of the various alloys involved. The tests are not designed to supplant chemical analysis, but they are useful in separating various Stainless types that show marked differences in their chemical and physical properties.

Carpenter STAINLESS STEEL

takes the problems out of production

Market Briefs

Grand Opening—This week at Joliet, Ill., Caterpillar Tractor Co. opened its new plant to the public. Use of expensive foreign and conversion steels has been largely eliminated at the new plant, but plate deliveries are still low. Demand for heavy earthmoving equipment continues strong, with deliveries taking as long as 6 months. Deliveries on light wheeled tractors now take about 2 weeks, reflecting lighter demand. Military orders still take about 17 pct of Caterpillar's output.

Starting Date—Fairless Works of U. S. Steel Co. will begin producing finished steel some time in third quarter. First product will be tinplate, followed by cold-rolled and hot-rolled sheets, pipe, bars, etc. The mill will be in full operation by second quarter of 1953. Original schedule called for tinplate production early in second quarter of 1952. But this could not be met due to (1) tremendous amount of engineering involved, (2) magnitude of job, (3) delays on delivery of equipment, and (4) high cost of overtime pay to accelerate work.

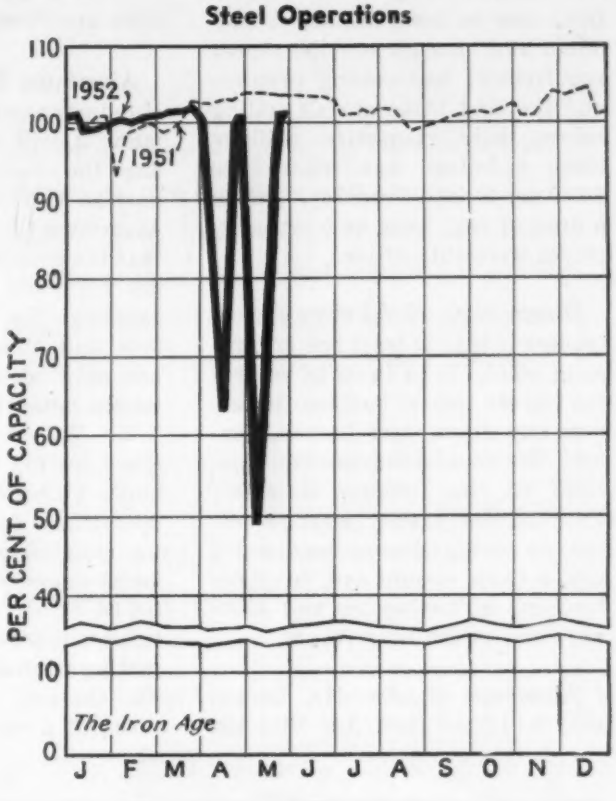
Cautious Action—Decision on Ford Motor Co.'s appeal to National Production Authority on production materials will not be handed down much before mid-June, control officials predict. Split opinion among other large manufacturers who would benefit from the Ford demand for revised quotas is one of the main reasons for cautious action. Smaller firms, who would lose allocation percentages, deny any materials accumulations by reason of lower production. Any lost production was because of such things as strikes, model change-overs and so on, they say, and any lost ground is now being made up.

New Furnace—Atlantic Steel Co., Atlanta, started up its new 60-ton electric furnace last week. Furnace, designed and built by Pittsburgh Lectromelt Furnace Corp., is a top-charged, basic model. Annual capacity is rated at 112,000 tons of steel. It will increase Atlantic's output by over 50 pct.

Decontrol — Industry spokesmen are urging National Production Authority to remove immediately all inventory controls on materials needed for production of pig iron. In any event, the NPA Industry Advisory Committee says, the agency should increase the present 60-day ceiling to not less than 90 days. Careful consideration is promised for both proposals.

Copper Transfer—National Production Authority has transferred authority to allocate blister copper from Defense Materials Procurement Agency back to itself for better conservation. Under the split allocation authority, NPA says, too much blister copper was going into production of copper sulphate and other chemicals, some of which are in plentiful supply. It is estimated that by holding down allocation of copper to actual chemical needs about 18 million lb of additional refined copper can be turned over to copper wire and brass mills and other essential uses.

Cutback—Jones & Laughlin Steel Corp. will build only 79 new coke ovens at its Pittsburgh Works instead of 106 ovens as originally planned. Money to be spent will be $11 million instead of $20 million. President C. L. Austin says other expansion cutbacks have been made.



District Operating Rates—Per Cent of Capacity

Week of	Pittsburgh	Chicago	Youngstown	Philadelphia	West	Buffalo	Cleveland	Detroit	Wheeling	South	Ohio River	St Louis	East	Aggregate
May 11	100.0*	103.5	102.0*	100.0	102.0*	104.0	101.0*	104.0*	97.0*	102.0	94.5	83.5	90.0*	101.0*
May 18	102.0	103.0	101.0	101.0	102.0	104.0	101.0	110.0	97.0	102.0	94.5	87.0	105.0	101.5

Beginning Jan 1, 1952, operations are based on annual capacity of 108,587,670 net tons
* Revised

Metal Decontrol Starts in Earnest

Lead, antimony, bismuth and cadmium free of all controls but price . . . Zinc allocation and use restrictions ended . . . Larson says RFC should quit tin buying—*By R. L. Hatschek.*

Biggest news last week in the metal trade was also good news—the whittling down of controls on several of the metals. Lead, antimony, bismuth and cadmium were freed completely by National Production Authority. Zinc allocation and use controls were lifted while maintaining a 60-day inventory restriction.

Reason given for the action was that these materials are now in sufficiently good supply to warrant a free market. Only remaining controls now on lead, antimony, cadmium and bismuth are the report requirement and ceiling prices—and the first three are all selling below their respective ceilings since cadmium was reduced to $2.25 per lb last Thursday. This is a drop of 30¢. Lead and antimony prices were cut earlier.

Happy Sign—Good news for tin traders is that at least one government official is in favor of returning the tin import business to private importers. Jess Larson, General Services Administrator and chief of the Defense Materials Procurement Agency, went on record as saying Reconstruction Finance Corp. should exit from the business of buying tin and probably will in the near future.

Aluminum Stocks—Mr. Larson also told THE IRON AGE that the Canadian offer of aluminum for the national strategic stockpile was better for them than for the U. S. military effort. He views as satisfactory a stockpile sufficient for the changeover period between civilian production and full military output as long as the industry has sufficient capacity—which it will have as soon as the current expansion is completed.

What we do need is a good stock of bauxite and, according to Mr. Larson, U. S. aluminum ore stockpiles are "coming along nicely."

Aluminum Future—When asked if industry could sell all the aluminum it will be able to produce once the economy has returned to normal, I. W. Wilson, president of Aluminum Co. of America, replied that the country will then be looking for even greater productive capacity. He foresees huge markets and stated that "aluminum has only begun to realize its ultimate potentials."

Mr. Wilson and Alcoa are not alone in this view. J. Louis Reynolds, vice-president in charge of operations for Reynolds Metals Co., pointed out last week that a metal's supply must be well established before any large manufacturer will use it. Aluminum is now getting to that point where people like the auto makers can be assured of a reasonably stable and ample supply to meet their demands if they should increase their use of the light metal. New experimental cars indicate such a trend.

Silver Dull—The market for silver seems to have lost much of its luster in the past two weeks. Four 1¢ price cuts in current months have brought the price down to 84¢ per Troy oz. Low demand has resulted in an increase in producers' stocks of the metal, the two factors which dictated the lower prices. And demand doesn't seem to have picked up much as a result of the cuts.

Copper Output—April statistics of the Copper Institute show an increase in domestic production of refined metal to 98,402 tons as compared to 94,563 tons for the preceding month. Foreign output of member companies also rose from 98,767 tons in March to 107,237 tons in April. Domestic deliveries to fabricators dipped to 107,355 tons from 112,625 tons in March with a resultant increase of nearly 3000 tons in refined stocks at the end of the month.

But the big question—still unanswered—is the status of negotiations between the U. S. and Chile on copper prices. Rumors are flying thick and fast as a result of the secrecy under which the talks are shrouded. Most often heard is the figure of 30¢ per lb, 3½¢ below the last public Chilean demand.

Big Spread—Should the government agree to such a price, or any price above the current 27½¢ import limit, domestic producers would be mighty unhappy. The cry would again be raised that American copper is worth as much as Chilean metal and people would again start writing their Congressmen.

It's obvious that our guns and butter production could not be maintained without Chilean copper. That makes it dead certain that Washington is pressing for as early an agreement as possible.

NONFERROUS METAL PRICES

	May 14	May 15	May 16	May 17	May 19	May 20
Copper, electro, Conn.	24.50	24.50	24.50	24.50	24.50	24.50
Copper, Lake delivered	24.625	24.625	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.215	$1.215	$1.215	....	$1.215	$1.215
Zinc, East St. Louis	19.50	19.50	19.50	19.50	19.50	19.50
Lead, St. Louis	14.80	14.80	14.80	14.80	14.80	14.80

Note: Quotations are going prices.

MAGNESIUM

and the problem of WEIGHT

in your product

From designer's board to customer's hands, weight in your product may be expensive. Weight enters into the cost of the raw material. Weight determines production methods and machinery requirements. It enters into the cost of labor and the cost of transportation. And in many products, extra weight is a costly penalty in sales results. Weight, wherever it is found, costs money.

Now, consider magnesium. Here is the world's lightest structural metal. Its weight is nearly 75% less than that of steel . . . 33% less than aluminum. Wherever design is based on weight limitations, this lightness permits the use of thicker, more rigid sections without a weight penalty. In thousands of applications, magnesium has permitted better design, better performance, more payload, and at the same time decreased costly weight.

In redesigning your product for tomorrow's market, plan with magnesium, the world's lightest structural metal, a standard material wherever light weight is important.

THE DOW CHEMICAL COMPANY
Magnesium Department • Midland, Michigan
New York • Boston • Philadelphia • Atlanta • Cleveland • Detroit
Chicago • St. Louis • Houston • San Francisco • Los Angeles • Seattle
Dow Chemical of Canada, Limited, Toronto, Canada

Nonferrous Prices

MILL PRODUCTS

(Cents per lb, unless otherwise noted)

Aluminum

(Base 20,000 lb, f.o.b. ship. pt. frt. allowed)

Flat Sheet: 0.188 in., 2S, 3S, 30.1¢; 4S, 61S-O, 32¢; 52S, 34.1¢; 24S-O, 24S-OAL, 32.9¢; 75S-O, 75S-OAL, 39.9¢; 0.081 in., 2S, 3S, 31.2¢; 4S, 61S-O, 33.5¢; 52S, 35.6¢; 24S-O, 24S-OAL, 34.1¢; 75S-O, 75S-OAL, 41.8¢; 0.032 in., 2S, 3S, 32.9¢; 4S, 61S-O, 37.1¢; 52S, 39.8¢; 24S-O, 24S-OAL, 41.7¢; 75S-O, 75S-OAL, 52.2¢.

Plate ¼ in. and heavier: 2S, 3S-F, 28.3¢; 4S-F, 30.2¢; 52S-F, 31.8¢; 61S-O, 30.8¢; 24S-O, 24S-OAL, 32.4¢; 75S-O, 75S-OAL, 38.8¢.

Extruded Solid Shapes: shape factors 1 to 5, 36.2¢ to 74.5¢; 12 to 14, 36.9¢ to 89¢; 24 to 26, 39.6¢ to $1.16; 36 to 38, 47.2¢ to $1.70.

Rod, Rolled: 1.5 to 4.5 in., 2S-F, 3S-F, 37.5¢ to 38.5¢; cold finished, 0.375 to 3 in., 2S-F, 3S-F, 40.5 to 35¢.

Screw Machine Stock: Rounds, 11S-T3, ⅛ to 11/32 in., 53.5¢ to 42¢; ⅝ to 1½ in., 41.5¢ to 39¢; 1 9/16 to 3 in., 38.5¢ to 36¢; 17S-T4 lower by 1.5¢ per lb. Base 5000 lb.

Drawn Wire: Coiled, 0.051 to 0.374 in., 2S, 39.5¢ to 29¢; 52S, 48¢ to 35¢; 56S, 51¢ to 42¢; 17S-T4, 54¢ to 37.5¢; 61S-T4, 48.5¢ to 37¢; 75S-T6, 84¢ to 67.5¢.

Extruded Tubing, Rounds: 63S-ST-5, OD in in.: 1¼ to 2, 37¢ to 54¢; 2 to 4, 33.5¢ to 45.5¢; 4 to 6, 34¢ to 41.5¢; 6 to 9, 34.5¢ to 43.5¢.

Roofing Sheet, Flat: 0.019 in. x 28 in. per sheet, 72 in., $1.42; 96 in., $1.522; 120 in., $1.902; 144 in., $2.284. Gage 0.24 x 28 in., 72 in., $1.379; 96 in., $1.839; 120 in., $2.299; 144 in., $2.759. **Coiled Sheet:** 0.019 in. x 28 in., 28.2¢ per lb; 0.024 in. x 28 in., 26.9¢ lb.

Magnesium

(F.O.B. mill, freight allowed)

Sheet and Plate: FS1-O, ¼ in., 63¢; 3/16 in., 65¢; ½ in., 67¢; B & S Gage 10, 68¢; 12, 72¢. Specification grade higher. Base: 30,000 lb.

Extruded Round Rod: M, diam in., ¼ to 0.311 in., 74¢; ½ to ¾ in., 57.5¢; 1¼ to 1.749 in., 53¢; 2½ to 5 in., 48.5¢. Other alloys higher. Base up to ⅜ in. diam, 10,000 lb; ⅝ to 2 in., 20,000 lb; 2 in. and larger, 30,000 lb.

Extruded Solid Shapes, Rectangles: M. In weight per ft, for perimeters less than size indicated, 0.10 to 0.11 lb, 3.5 in., 62.3¢; 0.22 to 0.25 lb, 5.9 in., 59.3¢; 0.50 to 0.59 lb, 8.6 in., 56.7¢; 1.8 to 2.59 lb, 19.5 in., 53.8¢; 4 to 6 lb, 28 in., 49¢. Other alloys higher. Base, in weight per ft of shape: Up to ½ lb, 10,000 lb; ½ to 1.80 lb, 20,000 lb; 1.80 and heavier, 30,000 lb.

Extruded Round Tubing: M, wall thickness, outside diam, in., 0.049 to 0.057; ¼ in. to 5/16, $1.40; 5/16 to ⅜, $1.26; ½ to ⅝, 93¢; 1 to 2 in., 76¢; 0.165 to 0.219, ⅞ to ¾, 61¢; 1 to 2 in., 57¢; 3 to 4 in., 56¢. Other alloys higher. Base, OD in in.: Up to 1½ in., 10,000 lb; 1½ in. to 3 in., 20,000 lb; 3 in. and larger, 30,000 lb.

Titanium

(10,000 lb base, f.o.b. mill)

Commercially pure and alloy grades: Sheets and strip, HR or CR, $15; Plate, HR, $12; Wire, rolled and/or drawn, $10; Bar, HR or forged, $6; Forgings, $6.

Nickel and Monel

(Base prices, f.o.b. mill)

	"A" Nickel	Monel
Sheets, cold-rolled	77	60½
Strip, cold-rolled	83	63½
Rods and bars	73	58½
Angles, hot-rolled	73	58½
Plates	75	59½
Seamless tubes	106	93½
Shot and blocks	..	53½

Copper, Brass, Bronze

(Freight prepair on 200 lb)

	Sheet	Rods	Extruded Shapes
Copper	41.68	....	41.28
Copper, h-r	....	37.53	....
Copper, drawn	....	38.78	....
Low brass	39.67	39.36	....
Yellow brass	38.28	37.97	....
Red brass	40.14	39.83	....
Naval brass	43.20	37.26	38.52
Leaded copper	....	41.58	....
Com'l bronze	41.13	40.82	....
Mang. bronze	46.92	40.81	42.37
Phos. bronze	61.07	61.32	....
Muntz metal	41.18	36.74	37.99
Ni silver, 10 pct	49.82	52.04	....

PRIMARY METALS

(Cents per lb, unless otherwise noted)

Aluminum ingot, 99+%, 10,000 lb, freight allowed	19.00
Aluminum pig	18.00
Antimony, American, Laredo, Tex.	44.00
Berryllium copper, 3.75-4.25% Be	$1.56
Beryllium aluminum 5% Be, Dollars per lb contained Be	$69.50
Bismuth, ton lots	$2.25
Cadmium, del'd	$2.25
Cobalt, 97-99% (per lb)	$2.40 to $2.47
Copper, electro, Conn. Valley	24.50
Copper, Lake, delivered	24.625
Gold, U. S. Treas., dollars per oz.	$35.00
Indium, 99.8%, dollars per troy oz.	$2.25
Iridium dollars per troy oz.	$200
Lead, St. Louis	14.80
Lead, New York	15.00
Magnesium, 99.8+%, f.o.b. Freeport, Tex., 10,000 lb.	24.50
Magnesium, sticks, 100 to 500 lb.	42.00 to 44.00
Mercury, dollars per 76-lb flask, f.o.b. New York	$200 to $204
Nickel electro, f.o.b. N. Y. warehouse	59.58
Nickel oxide sinter, at Copper Creek, Ont., contained nickel	52.75
Palladium, dollars per troy oz.	$24.00
Platinum, dollars per troy oz.	$90 to $93
Silver, New York, cents per oz.	84.00
Tin, New York	$1.215
Titanium, sponge	$5.00
Zinc, East St. Louis	19.50
Zinc, New York	20.33
Zirconium copper, 50 pct	$6.20

REMELTED METALS

Brass Ingot

(Cents per lb, delivered carloads)

85-5-5-5 ingot	
No. 115	27.25
No. 120	26.75
No. 123	26.25
80-10-10 ingot	
No. 305	33.00
No. 315	30.50
88-10-2 ingot	
No. 210	41.50
No. 215	40.00
No. 245	34.50
Yellow ingot	
No. 405	23.25
Manganese bronze	
No. 421	30.50

Aluminum Ingot

(Cents per lb, 10,000 lb and over)

95-5 aluminum-silicon alloys	
0.30 copper, max.	20.6
0.60 copper, max.	20.4
Piston alloys (No. 122 type)	21.2
No. 12 alum. (No. 2 grade)	19.5
108 alloy	20.6
195 alloy	20.8
13 alloy	20.8
ASX-679	20.5

Steel deoxidizing aluminum, notch-bar granulated or shot

Grade 1—95-97½%	18.80
Grade 2—92-95%	18.60
Grade 3—90-92%	18.40
Grade 4—85-90%	18.20

ELECTROPLATING SUPPLIES

Anodes

(Cents per lb, freight allowed, 500 lb lots)

Copper	
Cast, oval, 15 in. or longer	37.84
Electrodeposited	33¾
Flat rolled	38.34
Forged ball anodes	43
Brass, 80-20	
Cast, oval, 15 in. or longer	34¾
Zinc, oval	26½
Ball anodes	25½
Nickel, 99 pct plus	
Cast	76.00
Rolled, depolarized	77.00
Cadmium	$2.40
Silver 999 fine, rolled, 100 oz lots, per troy oz., f.o.b. Bridgeport, Conn.	97½

Chemicals

(Cents per lb, f.o.b. shipping points)

Copper cyanide, 100 lb drum	63
Copper sulfate, 99.5 crystals, bbl.	12.85
Nickel salts, single or double, 4-100 lb bags, frt. allowed	20½
Nickel chloride, 375 lb drum	27½
Silver cyanide, 100 oz lots, per oz.	67¼
Sodium cyanide, 96 pct domestic 200 lb drums	19.35
Zinc cyanide, 100 lb drum	47.7

SCRAP METALS

Brass Mill Scrap

(Cents per pound, add ½¢ per lb for shipments of 20,000 to 40,000 lb; add 1¢ for more than 40,000 lb)

	Heavy	Turnings
Copper	21½	20¾
Yellow brass	19½	17¾
Red brass	20½	17¾
Comm. bronze	20½	19¾
Mang. bronze	18½	17¾
Brass rod ends	18¾	....

Custom Smelters' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
Refinery brass	17.25*
Radiators	14.75

* Dry copper content.

Ingot Makers' Scrap

(Cents per pound, carload lots, delivered to refinery)

No. 1 copper wire	19.25
No. 2 copper wire	17.75
Light copper	16.50
No. 1 composition	18.50
No. 1 comp. turnings	18.25
Rolled brass	15.50
Brass pipe	16.50
Radiators	14.75
Aluminum	
Mixed old cast	9.75
Mixed new clips	11.00
Mixed turnings, dry	9.50
Pots and pans	9.25

Dealers' Scrap

(Dealers' buying price, f.o.b. New York in cents per pound)

Copper and Brass	
No. 1 heavy copper and wire	18¾—19¼
No. 2 heavy copper and wire	17¾—17¾
Light copper	16 —16½
New type shell cuttings	16 —16½
Auto radiators (unsweated)	14¼—14¾
No. 1 composition	18 —18½
No. 1 composition turnings	17¾—18
Unlined red car boxes	16¾—17⅛
Cocks and faucets	15½—16
Mixed heavy yellow brass	12 —12½
Old rolled brass	15 —15½
Brass pipe	16 —16½
New soft brass clippings	16 —16½
Brass rod ends	15½—16
No. 1 brass rod turnings	15 —15½
Aluminum	
Alum. pistons and struts	6½— 7½
Aluminum crankcases	7½— 8
2S aluminum clippings	10½
Old sheet and utensils	7½— 8
Borings and turnings	5 — 6
Misc. cast aluminum	7½— 8
Dural clips (24S)	7½— 8
Zinc	
New Zinc clippings	13¼—13½
Old zinc	10 —10¼
Zinc routings	6¾— 7
Old die cast scrap	6¾— 7
Nickel and Monel	
Pure nickel clippings	35 —36
Clean nickel turnings	35 —36
Nickel anodes	35 —36
Nickel rod ends	35 —36
New Monel clippings	28 —29
Clean Monel turnings	20 —21
Old sheet Monel	28 —29
Nickel silver clippings, mixed	13 —14
Nickel silver turnings, mixed	12 —13
Lead	
Soft scrap, lead	11 —11¼
Battery plates (dry)	6½— 7
Batteries, acid free	5
Magnesium	
Segregated solids	15 —16
Castings	14 —15
Miscellaneous	
Block tin	100 —110
No. 1 pewter	80
No. 1 auto babbitt	60
Mixed common babbitt	13½—14
Solder joints	19 —20
Siphon tops	60
Small foundry type	18½
Monotype	15 —15½
Lino. and stereotype	14 —14½
Electrotype	12 —12½
Hand picked type shells	13 —13½
Lino. and stereo. dross	6 — 6½
Electro. dross	4 — 5

• NON-FERROUS METALS
• ORES AND MINERALS
• METALLIC RESIDUES
• METAL SCRAP
• FERRO ALLOYS
Phibro
MANGANESE ORE
CHROME ORE
TUNGSTEN ORE
Philipp Brothers, Inc.
NEW YORK 5, N. Y., Cables: PHIBRO, New York
Offices: AMSTERDAM • MONTREAL • TOKYO • BUENOS AIRES • MONTEVIDEO • LA PAZ • LIMA • CALCUTTA

Blast Furnace Scrap Under Ceiling

Happens in Ohio . . . No sign of spread elsewhere just yet . . . Grades are weak all over . . . Drop is on basis of broker deal . . . Steelmaking grades stand firm . . . Stockpiles fatten.

The Office of Price Stabilization ceiling price on blast furnace grades was ruptured in the Ohio area last week. It was done so on the basis of broker buying. The sale was reportedly $2 below ceiling and the scrap was destined for an out-of-the-area steel mill still in the market for blast furnace grades. The mill thought to be involved denied contracting for this scrap at below ceiling. It admitted, however, that one of its broker representatives may have bought the scrap in a weak area at below ceiling. The mill claimed the scrap will arrive at the mill at ceiling prices.

A check of all scrap centers by IRON AGE regional editors did not reveal any other breakthroughs on the ceiling. But it was plain that blast furnace grades had seen better days. In one case it was reported that a broker's offer to sell below ceiling was rejected by a mill. This was in a soft area.

Buying interest has diminished considerably in blast furnace grades and it was indicated in IRON AGE that this grade and possibly bundles may be the first to slip under ceiling. Weakness in bundles is evidenced by instructions from mills to brokers limiting percentages of bundles.

Some scrap men believe that other districts will soon be reporting below ceiling sales on blast furnace grades. Steelmaking grades stood firm pricewise and traffic here is brisk. Not much is accumulating in dealers' yards. Meanwhile steel plant stockpiles are wearing that prosperous look and are near safe limits.

The shortage of last winter is only a memory. Pittsburgh reports that in event of a strike scrap flow will stop almost dead in its tracks. Outside depots will be mostly idle.

Pittsburgh — Scrap movement will virtually cease in event of another steel strike. It was understood here that consumers have decded against laying down material should steel workers again shut down the industry. This was another indication of ample scrap inventories. Dealers are learning the hard way that the honeymoon is over. Mills are continuing to bear down on inspections, and rejections and downgrading are widespread. The turnings market is weak —very little is being bought. Cast continues slow.

Chicago — Scrap dealers were not optimistic about the market this week. Openhearth was still moving well. Inspections were tight. Scrap people watch the market with considerable caution. Electric furnace was again moving slowly with springboards cut. Cast was stagnant, despite recent stove plate purchases. Mills have good inventories, now over the 45-day mark, generally. One source indicated an open market in all grades might be expected in less than 60 days.

Philadelphia — Market continues fairly stable with strong demand for steel grades, light demand for low phos and very little activity in cast. Truck shipments, which had been held up in this district, are beginning to open up again. One mill has limited its acceptance of bundles to 20 pct of each order.

New York—Blast furnace grades of scrap were weak here but managed to hold at ceiling prices. This area is not a heavy producer of that grade and one of the major mills buying it has not halted shipments. Trouble for blast furnace grades may develop in New England because of the longer freight haul. Steelmaking grades were moving well. Nothing gathered dust in dealers' yards. Mills were shortening contracts.

Detroit—Weakness in turnings and borings persists here. It may be approaching the point where a short sale will be made in blast furnace grades. Mills are buying, but brokers complain that the market is not being supported elsewhere. Below ceiling sales are not being made, but there is enough talk to make it a possibility. In openhearth grades, buyers are demanding, and getting, excellent quality. Cast scrap is such a drug on the market that brokers' buying prices, listed $3 below ceiling, may require a downward revision.

Cleveland — Reliable sources reported last week a purchase of blast furnace grades of scrap in the Ohio area at $2 per gross ton below the ceiling price. Lack of buying in the Cleveland area may bring the price lower as some local consumers are not placing orders at reduced offerings from brokers. Machine shop turnings and good alloy-free short shoveling, while still going at ceiling prices, may be in for a reduction.

St. Louis—Ceiling prices still held for openhearth grades by steel mills here. The only change is that one of the major consumers has told brokers only 30 pct of orders can be bundles. Mill buying orders extend into June deliveries. Movement of scrap iron into the district has been stepped up, as country dealers fear a strike would shut off shipments.

Birmingham—Northern mills seem to be limiting purchases of scrap from remote areas because of long rail hauls. Dealers, particularly in Florida, complain freight rates are too high. Mill orders now contain a strict 30-day delivery basis contract. No dealer is suffering here. All have enough orders for this month.

Cincinnati—Scrap situation in this area remains pretty much the same. Scrap is moving steadily to local mills. Mills are continually building inventory approaching desired goals. Quality scrap is generally becoming more available for more particular consumers. Inventories here are on the whole lower than elsewhere.

Boston—Blast furnace grades are soft but prices have not as yet dipped below ceiling levels. A drop in Grade 7 is expected very shortly. Cast prices are still falling, but steelmaking scrap is active and selling at ceiling rates.

Buffalo—Cast prices skidded sharply. (See p. 192.) Steelmaking grades were unchanged. New contracts were expected.

how we measure service

To meet increasingly rigid specifications, today's steel-making operations demand materials of highest quality.

The strict attention given by Luntz in selecting types of scrap peculiar to the individual consumer's needs is the result of a standard that measures service as stringently as a micrometer measures machining.

A constant effort to meet these standards and to improve upon them is the promise of continued leadership by Luntz.

The LUNTZ IRON & STEEL CO.

offices CANTON, OHIO · CLEVELAND, OHIO · KOKOMO, INDIANA · DETROIT, MICHIGAN

plants CANTON, OHIO · KOKOMO, INDIANA · WARREN, OHIO · HUBBARD, OHIO

Iron and Steel

SCRAP PRICES

(Maximum basing point prices, per gross ton, as set by OPS in CPR 5 and amendments. Shipping point and delivered prices calculated as shown below.)

GRADES	OPS No.	Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown	Chicago	Claymont	Conshohocken	Harrisburg	Phoenixville	Sparrows Pt.	Bethlehem	Ashland, Ky.	Kokomo, Ind.	Portsmouth, O.	St. Louis	Detroit	Duluth	Kansas City	Birmingham	Alabama City	Atlanta	Minneapolis	Houston	Los Angeles	Pittsburg, Cal.	Portland, Ore.	San Francisco	Seattle
Switching Charge (Dollars per gross ton) →		$0.99	.70	.63	.68	.75	.51	.75	.75	.51	.51	.76	.70	.76	.63	.68	.28	1.34	.76	.59	.20	.51	.20	.52	.47	.51	.51	.51	.95	.50	.76	.93	.43	.51	.53	.57				
Basing Points →		Pittsburgh	Johnstown	Brackenridge	Butler	Midland	Monessen	Sharon	Youngstown	Canton	Steubenville	Warren	Weirton	Cleveland	Buffalo	Cincinnati	Middletown	Chicago	Claymont	Conshohocken	Harrisburg	Phoenixville	Sparrows Pt.	Bethlehem	Ashland, Ky.	Kokomo, Ind.	Portsmouth, O.	St. Louis	Detroit	Duluth	Kansas City	Birmingham	Alabama City	Atlanta	Minneapolis	Houston	Los Angeles	Pittsburg, Cal.	Portland, Ore.	San Francisco	Seattle
No. 1 bundles	1	$44.00		$44.00	$43.00	$42.50	$42.00	$41.00	$41.15	$40.00	$39.50	$39.00	$38.00	$37.00																											
No. 1 busheling	2	44.00		44.00	43.00	42.50	42.00	41.00	41.15	40.00	39.50	39.00	38.00	37.00																											
No. 1 heavy melting	3	43.00		43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00																											
No. 2 heavy melting	4	43.00		43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00																											
No. 2 bundles	5	43.00		43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00																											
Machine shop turnings	6	34.00		34.00	33.00	32.50	32.00	31.00	31.15	30.00	29.50	29.00	28.00	27.00																											
Mixed borings and turnings	7	38.00		38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00																											
Shoveling turnings	8	38.00		38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00																											
Cast iron borings	10	38.00		38.00	37.00	36.50	36.00	35.00	35.15	34.00	33.50	33.00	32.00	31.00																											
No. 1 chemical borings	26	41.00		41.00	40.00	39.50	39.00	38.00	38.15	37.00	36.50	36.00	35.00	34.00																											
Forge crops	11	51.50		51.50	50.50	50.00	49.50	48.50	48.65	47.50	47.00	46.50	45.50	44.50																											
Bar crops and plate	12	49.00		49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00																											
Punchings and plate	14	46.50		46.50	45.50	45.00	44.50	43.50	43.65	42.50	42.00	41.50	40.50	39.50																											
Electric furnace bundles	15	46.00		46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00																											
Cut struct., plate, 3 ft and less	16	47.00		47.00	46.00	45.50	45.00	44.00	44.15	43.00	42.50	42.00	41.00	40.00																											
Cut struct., plate, 2 ft and less	17	49.00		49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00																											
Cut struct., 1 ft and less	18	50.00		50.00	49.00	48.50	48.00	47.00	47.15	46.00	45.50	45.00	44.00	43.00																											
Foundry steel, 2 ft and less	20	44.00		44.00	43.00	42.50	42.00	41.00	41.15	40.00	39.50	39.00	38.00	37.00																											
Foundry steel, 1 ft and less	21	46.00		46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00																											
Heavy trimmings	24	43.00		43.00	42.00	41.50	41.00	40.00	40.15	39.00	38.50	38.00	37.00	36.00																											
No. 1 RR heavy melting	RR 1	46.00		46.00	45.00	44.50	44.00	43.00	43.15	42.00	41.50	41.00	40.00	39.00																											
Scrap rails, random lengths	RR 14	48.00		48.00	47.00	46.50	46.00	45.00	45.15	44.00	43.50	43.00	42.00	41.00																											
Scrap rails, 3 ft and less	RR 16	51.00		51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00																											
Scrap rails, 2 ft and less	RR 17	52.00		52.00	51.00	50.50	50.00	49.00	49.15	48.00	47.50	47.00	46.00	45.00																											
Scrap rails, 18 in. and less	RR 18	54.00		54.00	53.00	52.50	52.00	51.00	51.15	50.00	49.50	49.00	48.00	47.00																											
Rerolling rails	RR 15	53.00		53.00	52.00	51.50	51.00	50.00	50.15	49.00	48.50	48.00	47.00	46.00																											
Uncut tires	RR 20	48.00		48.00	47.00	46.50	46.00	45.00	45.15	44.00	43.50	43.00	42.00	41.00																											
Cut tires	RR 21	51.00		51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00																											
Cut bolsters and side frames	RR 23	49.00		49.00	48.00	47.50	47.00	46.00	46.15	45.00	44.50	44.00	43.00	42.00																											
RR specialties	RR 24, 28, 29	51.00		51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00																											
Solid steel axles	RR 25	58.00		58.00	57.00	56.50	56.00	55.00	55.15	54.00	53.50	53.00	52.00	51.00																											
No. 3 steel wheels	RR 27	51.00		51.00	50.00	49.50	49.00	48.00	48.15	47.00	46.50	46.00	45.00	44.00																											
Unassorted	RR 35	40.00		40.00	39.00	38.50	38.00	37.00	37.15	36.00	35.50	35.00	34.00	33.00																											

Cast Scrap Ceilings

Prices set by CPR 5, OPS

(F.o.b. all shipping points)

Grades	OPS No.	
Cupola cast	1	$49.00
Charging box cast	2	47.00
Heavy breakable cast	3	45.00
Cast iron brake shoes	5	41.00
Stove plate	6	46.00
Clean auto cast	7	52.00
Unstripped motor blocks	8	43.00
Cast iron carwheels	9	47.00
Malleable	10	55.00
Drop broken mach'y cast	11	52.00

Ceiling price of clean cast iron foundry runout or prepared cupola drops is 75 pct of corresponding grade.

Below-Ceiling Prices

PITTSBURGH (Delivered)

Drop broken mach'y cast	$52.50 to $53.00
Cupola cast	45.00 to 46.00
Charging box cast	47.00
Heavy breakable	45.50 to 46.00

CHICAGO (Delivered)

Cupola cast	$43.00 to $44.00
Stove plate	36.00 to 38.00
Heavy breakable	39.00 to 40.00
Drop broken machinery	45.00 to 46.00
Unstripped motor blocks	34.00 to 36.00
Charging box cast	41.50 to 42.50
Clean auto cast	44.50 to 46.00
Malleable	52.00 to 53.00

PHILADELPHIA (Delivered)

Cupola cast	$41.00 to $42.00
Heavy breakable	38.00 to 40.00
Clean auto cast	44.00 to 46.00
Unstripped motor blocks	34.00 to 35.00
Charging box cast	40.00 to 42.00

CLEVELAND (Delivered)

Mixed borings, turnings	$35.00 to $36.00
Shoveling turnings	35.00 to 36.00
Cast iron borings	35.00 to 36.00
Unstripped motor blocks	38.00 to 39.00
Cupola cast	46.00 to 47.00
Heavy breakable	39.00 to 40.00
Drop broken machinery	51.00 to 52.00

BIRMINGHAM (Delivered)

Cupola cast	$42.00 to $43.00
Stove plate	39.00 to 40.00
Charging box cast	39.00 to 40.00
Heavy breakable	36.00 to 37.00
Drop broken machinery	42.00 to 43.00
Unstripped motor blocks	35.00 to 36.00

ST. LOUIS (Delivered)

Heavy breakable	$45.00
Stove plate	42.00

NEW YORK (Brokers' buying prices)

Drop broken machinery	$36.00 to $38.00
Mixed yard cast	36.00
Charging box cast	36.00 to 38.00
Heavy breakable	36.00
Unstripped motor blocks	30.00 to 31.00

BOSTON (Brokers' buying prices)

Cupola cast	$33.00
Stove plate	33.00
Unstripped motor blocks	30.00
Heavy breakable	33.00

DETROIT (Brokers' buying prices)

Cupola cast	$46.00
Charging box	45.00
Heavy breakable	43.00
Cast iron brake shoes	39.00
Stove plate	44.00
Unstripped motor blocks	40.00
Drop broken machinery cast	50.00

CINCINNATI (Delivered)

Unstripped motor blocks	$40.00
Stove plate	45.00
Clean auto cast	47.00

BUFFALO (F.o.b. shipping point)

Cupola cast	$40.00 to $41.00

SAN FRANCISCO (Delivered)

Cupola cast	$42.00
No. 2 bundles	29.00

LOS ANGELES (Delivered)

Cupola cast	$46.00
No. 2 bundles	29.00

SEATTLE (Delivered)

Cupola cast	$36.50
Heavy breakable	32.00
No. 2 bundles	29.00

SHIPPING POINT PRICES (Except RR scrap) —for shipping points within basing points, the ceiling shipping point price is the basing point price, less switching charge. The ceiling for shipping points outside basing points is the basing point price yielding the highest shipping point price, less the lowest established freight charge. Dock charge, where applicable, is $1.25 per gross ton except: Memphis, 95¢; Great Lakes ports, $1.50¢, and New England ports, $1.75. Maximum shipping point price on No. 1 bundles (prime grade) in New York City is $36.99 per gross ton with set differentials for other grades. Hudson and Bergen County, N. J., shipping point prices are computed from Bethlehem basing point.

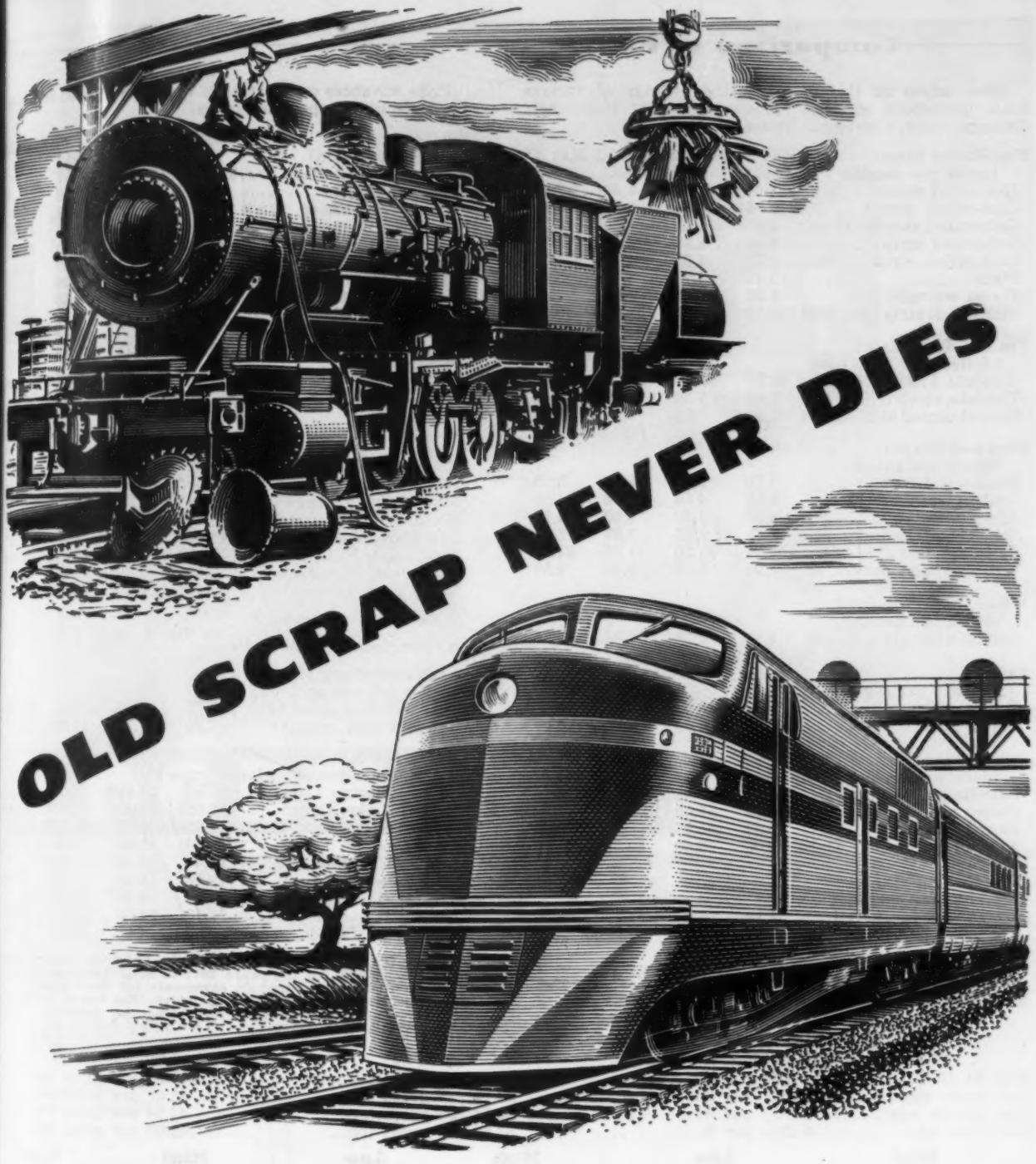
CEILING INTRANSIT PREPARATION CHARGES (Dollars per gross ton)

No. 1 heavy; No. 2 heavy; No. 1 RR heavy; No. 2 RR heavy; No. 1 busheling; No. 2 bundles; electric furnace bundles	$3.00
No. 1 bundles; briquetted turnings or cast iron borings; No. 1 RR sheet scrap	6.00
Crushing machine shop turnings	3.00
Bar crops and plate, cast steel, punchings and plate, cut structural and plate; 3 ft and under, foundry steel, 2 ft and under, wrought iron	10.00
Structural, plate scrap, 2 ft and less, foundry steel, 1 ft and less	11.00
Structural and plate scrap, 1 ft and less	12.00
Rails, 3 ft & less; cut tires; cut bolsters & side frames	4.00
Rails, 2 ft & less	5.00
Rails, 18 in. & less	7.00

Hamilton, Ontario

(Consumers buying prices, del'd gross ton)

Hvy. melting steel	$35.00
No. 1 bundles	35.00
No. 2 bundles	34.50
Mechanical bundles	33.00
Mixed, steel scrap	31.00
Rails, remelting	35.00
Rails, rerolling	33.00
Bushelings	30.00
Bushelings, prepared new factory	33.00
Bushelings, unprepared new factory	32.00
Short steel turnings	32.00
Mixed borings, turnings	32.00
Cast scrap	50.00



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BIRMINGHAM, ALA.	DETROIT, MICH.	PITTSBURGH, PENNA.
BOSTON, MASS.	HOUSTON, TEXAS	PUEBLO, COLORADO
BUFFALO, N. Y.	LEBANON, PENNA	READING, PENNA
CHICAGO, ILLINOIS	LOS ANGELES, CAL.	ST. LOUIS, MO.
CLEVELAND, OHIO	NEW YORK, N. Y	SAN FRANCISCO, CAL
	SEATTLE, WASH.	

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Comparison of Prices

Steel prices on this page are the average of various f.o.b. quotations of major producing areas: Pittsburgh, Chicago, Gary, Cleveland, Youngstown.

Flat-Rolled Steel: (cents per pound)	May 20, 1952	May 13, 1952	Apr. 22, 1952	May 22, 1951
Hot-rolled sheets	3.60	3.60	3.60	3.60
Cold-rolled sheets	4.35	4.35	4.35	4.35
Galvanized sheets (10 ga)	4.80	4.80	4.80	4.80
Hot-rolled strip	3.50	3.50	3.50	3.50
Cold-rolled strip	4.75	4.75	4.75	4.75
Plate	3.70	3.70	3.70	3.70
Plates wrought iron	7.85	7.85	7.85	7.85
Stains C-R strip (No. 302)	36.75	36.75	36.75	36.50
Tin and Terneplate: (dollars per base box)				
Tinplate (1.50 lb.) cokes	$8.70	$8.70	$8.70	$8.70
Tinplate, electro (0.50 lb.)	7.40	7.40	7.40	7.40
Special coated mfg. ternes	7.50	7.50	7.50	7.50
Bars and Shapes: (cents per pound)				
Merchant bars	3.70	3.70	3.70	3.70
Cold finished bars	4.55	4.55	4.55	4.55
Alloy bars	4.30	4.30	4.30	4.30
Structural shapes	3.65	3.65	3.65	3.65
Stainless bars (No. 302)	31.50	31.50	31.50	31.25
Wrought iron bars	9.50	9.50	9.50	9.50
Wire (cents per pound)				
Bright wire	4.85	4.85	4.85	4.85
Rails (dollars per 100 lb)				
Heavy rails	$3.60	$3.60	$3.60	$3.60
Light rails	4.00	4.00	4.00	4.00
Semifinished Steel: (dollars per net ton)				
Rerolling billets	$56.00	$56.00	$56.00	$56.00
Slabs, rerolling	56.00	56.00	56.00	56.00
Forging billets	66.00	66.00	66.00	66.00
Alloy blooms, billets, slabs	70.00	70.00	10.00	70.00
Wire Rod and Skelp: (cents per pound				
Wire rods	4.10	4.10	4.10	4.10
Skelp	3.35	3.35	3.35	3.35

Price advances over previous week are printed in Heavy Type; declines appear in *Italics*.

Pig Iron: (per gross ton)	May 20, 1952	May 13, 1952	Apr. 22, 1952	May 22, 1951
Foundry, del'd Phila.	$58.19	$58.19	$57.97	$57.77
Foundry, Valley	52.50	52.50	52.50	52.50
Foundry, Southern, Cin'ti	55.58	55.58	55.58	55.58
Foundry, Birmingham	48.88	48.88	48.88	48.88
Foundry, Chicago†	52.50	52.50	52.50	52.50
Basic, del'd Philadelphia	57.27	57.27	57.09	56.92
Basic, Valley furnace	52.00	52.00	52.00	52.00
Malleable, Chicago†	52.50	52.50	52.50	52.50
Malleable, Valley	52.50	52.50	52.50	52.50
Charcoal, Chicago	70.56	70.56	70.56	70.56
Ferromanganese‡	186.25	186.25	186.25	186.25

†The switching charges for delivery to foundries in the Chicago district is $1 per ton.
‡Average of U. S. prices quoted on Ferroalloy pages.

Scrap: (per gross ton)				
No. 1 steel, Pittsburgh	$43.00*	$43.00*	$43.00*	$44.00*
No. 1 steel, Phila. area	41.50*	41.50*	41.50*	42.50*
No. 1 steel, Chicago	41.50*	41.50*	41.50*	42.50*
No. 1 bundles, Detroit	41.15*	41.15*	41.15*	41.15*
Low phos., Young'n	46.50*	46.50*	46.50*	46.50*
No. 1 cast, Pittsburgh	45.50‡	45.50‡	45.50‡	49.00†
No. 1 cast, Philadelphia	41.50‡	41.50‡	48.00‡	49.00†
No. 1 cast, Chicago	*43.50*‡	44.50‡	44.00‡	49.00†

* Basing Pt. † Shipping Pt.
Not including broker's fee after Feb. 7, 1951.
‡ Del'd., includes broker's fee.

Coke: Connellsville: (per net ton at oven)				
Furnace coke, prompt	$14.75	$14.75	$14.75	$14.75
Foundry coke, prompt	17.75	17.75	17.75	17.75

Nonferrous Metals: (cents per pound to large buyers)				
Copper, electro, Conn.	24.50	24.50	24.50	24.50
Copper, Lake, Conn.	24.625	24.625	24.625	24.625
Tin, Straits, New York	$1.215	$1.215	$1.215	$1.39
Zinc, East St. Louis	19.50	19.50	19.50	17.50
Lead, St. Louis	14.80	14.80	18.80	16.80
Aluminum, virgin	19.00	19.00	19.00	19.00
Nickel, electrolytic	59.58	59.58	59.58	53.55
Magnesium, ingot	24.50	24.50	24.50	24.50
Antimony, Laredo, Tex.	44.00	44.00	50.00	42.00

Composite Prices

Starting with the issue of May 12, 1949, the weighted finished steel composite was revised for the years 1941 to date. The weights used are based on the average product shipments for the 7 years 1937 to 1940 inclusive and 1946 to 1948 inclusive. The use of quarterly figures has been eliminated because it was too sensitive. (See p. 139 of May 12, 1949, issue.

	Finished Steel Base Price	Pig Iron	Scrap Steel
May 20, 1952	4.131¢ per lb.	$52.77 per gross ton	$42.00 per gross ton
One week ago	4.131¢ per lb.	52.72 per gross ton	42.00 per gross ton
One month ago	4.131¢ per lb.	52.72 per gross ton	42.00 per gross ton
One year ago	4.131¢ per lb.	52.69 per gross ton	43.00 per gross ton

	High	Low	High	Low	High	Low
1952	4.131¢ Jan. 1	4.131¢ Jan. 1	$52.72 Jan. 1	$52.72 Jan. 1	$42.00 Jan. 1	$42.00 Jan. 1
1951	4.131¢ Jan. 2	4.131¢ Jan. 2	52.72 Oct. 9	52.69 Jan. 2	47.75 Jan. 30	42.00 Oct. 22
1950	4.131¢ Dec. 1	3.837¢ Jan. 3	52.69 Dec. 12	45.88 Jan. 3	45.13 Dec. 19	26.25 Jan. 3
1949	3.837¢ Dec. 27	3.705¢ May 3	46.87 Jan. 18	45.88 Sept. 6	43.00 Jan. 4	19.33 June 28
1948	3.721¢ July 27	3.193¢ Jan. 1	46.91 Oct. 12	39.58 Jan. 6	43.16 July 27	39.75 Mar. 9
1947	3.193¢ July 29	2.848¢ Jan. 1	37.98 Dec. 30	30.14 Jan. 7	42.58 Oct. 28	29.50 May 20
1946	2.848¢ Dec. 31	2.464¢ Jan. 1	30.14 Dec. 10	25.37 Jan. 1	31.17 Dec. 24	19.17 Jan. 1
1945	2.464¢ May 29	2.396¢ Jan. 1	25.37 Oct. 23	23.61 Jan. 2	19.17 Jan. 2	18.92 May 22
1944	2.396¢	2.396¢	$23.61	$23.61	19.17 Jan. 11	15.76 Oct. 24
1943	2.396¢	2.396¢	23.61	23.61	$19.17	$19.17
1942	2.396¢	2.396¢	23.61	23.61	19.17	19.17
1941	2.396¢	2.396¢	$23.61 Mar. 20	$23.45 Jan. 2	$22.00 Jan. 7	18.92 May 22
1940	2.30467¢ Jan. 2	2.24107¢ Apr. 16	23.45 Dec. 23	22.61 Jan. 2	21.83 Dec. 30	16.04 Apr. 9
1939	2.35367¢ Jan. 3	2.27207¢ May 16	22.61 Sept.19	20.61 Sept.12	22.50 Oct. 3	14.08 May 16
1938	2.58414¢ Jan. 4	2.27207¢ Oct. 18	23.25 June 21	19.61 July 6	15.00 Nov. 22	11.00 June 7
1937	2.58414¢ Mar. 9	2.32263¢ Jan. 4	32.25 Mar. 9	20.25 Feb. 16	21.92 Mar.30	12.67 June 9
1936	2.32263¢ Dec. 28	2.05200¢ Mar. 10	19.74 Nov. 24	18.73 Aug.11	17.75 Dec. 21	12.67 June 5
1929	2.31773¢ May 28	2.26498¢ Oct. 29	1871 May 14	18.21 Dec. 17	17.58 Jan. 29	14.08 Dec. 8

Weighted index based on steel bars, shapes, plates, wire, rails, black pipe, hot and cold-rolled sheets and strips, representing major portion of finished steel shipment. Index recapitulated in Aug. 28, 1941, issue and in May 12, 1949.

Based on averages for basic iron at Valley furnaces and foundry iron at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Average of No. 1 heavy melting steel scrap delivered to consumers at Pittsburgh, Philadelphia and Chicago.

This Logemann Hydraulic Paper Baler produces from 1,000 to 1,500 pound bales of miscellaneous paper and carton accumulations in a large industrial plant.

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STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		INGOTS		BILLETS, BLOOMS, SLABS			PIPE SKELP	PIL-ING	SHAPES STRUCTURAL		STRIP			
		Carbon Forging Net Ton	Alloy Net Ton	Carbon Rerolling Net Ton	Carbon Forging Net Ton	Alloy Net Ton		Steel Sheet	Carbon	Hi Str. Low Alloy	Hot-rolled	Cold-rolled	Hi Str. H.R. Low Alloy	Hi Str. C.R. Low Alloy
EAST	Bethlehem, Pa.					$70.00 *B3*			3.70 *B3*	5.50 *B3*				
	Buffalo, N. Y.			$56.00 *B3*	$66.00 *B3, R3*	$70.00 *B3, R3*		4.45 *B3*	3.70 *B3*	5.50 *B3*	3.50 *B3, R3*	4.65 *B3*	4.95 *B3*	5.40 *B3*
	Claymont, Del.													
	Coatesville, Pa.													
	Conshohocken, Pa.				$73.00 *A2*	$77.00 *A2*					3.90 *A2*		5.55 *A2*	
	Harrisburg, Pa.													
	Hartford, Conn.													
	Johnstown, Pa.			$56.00 *B3*	$66.00 *B3*	$70.00 *B3*			3.70 *B3*	5.50 *B3*	3.50 *B3*			
	Newark, N. J.													
	New Haven, Conn.											5.15 *A5* 5.85 *D1*		
	Phoenixville, Pa.								5.90 *P2*					
	Putnam, Conn.													
	Sparrows Pt., Md.										3.50 *B3*	4.65 *B3*	4.95 *A5, B3*	5.40 *B3*
	Worcester, Mass.													
	Trenton, N. J.											6.00 *R4*		
MIDDLE WEST	Alton, Ill.										3.95 *L1*			
	Ashland, Ky.										3.50 *A7*			
	Canton-Massillon				$66.00 *R3*	$70.00 *R3* $66.00 *T5*								
	Chicago, Ill.			$56.00 *U1*	$66.00 *U1, R3,W8*	$70.00 *U1, R3,W8*		4.45 *U1*	3.65 *U1, W8*	5.50 *U1*	3.50 *A1, W8*	4.90 *A1, I3*		
	Cleveland, Ohio				$66.00 *R3*							4.65 *A5, J3*		6.55 *A5* 6.70 *J3*
	Detroit, Mich.		$54.00 *R5*		$69.00 *R5*	$73.00 *R5*					4.40 *M2* 3.80 *G3*	4.85 *G3* 5.45 *M2* 5.60 *R5,D1*	5.95 *G3*	
	Duluth, Minn.													
	Gary, Ind. Harbor, Indiana			$56.00 *U1*	$66.00 *U1*	$70.00 *U1, Y1*		4.45 *I3*	3.65 *U1, I3*	5.50 *U1, I3* 6.00 *Y1*	3.50 *U1, Y1,I3*	4.90 *I3*	5.30 *U1, I3* 5.80 *Y1*	
	Granite City, Ill.													
	Kokomo, Ind.													
	Middletown, Ohio											4.65 *A7*		
	Niles, Ohio Sharon, Pa.										4.00 *S1*	5.35 *S1*	5.40 *S1*	6.55 *S1*
	Pittsburgh, Pa.	$52.00 *U1*	$54.00 *U1, C11*	$56.00 *U1*	$66.00 *U1*	$70.00 *U1, C11*	3.35 *U1* 3.45 *J3*	4.45 *U1*	3.65 *U1, J3*	5.50 *U1, J3*	4.00 *S9,S7* 3.75 *A3* 3.50 *J3,A7*	4.65 *J3,A7* 5.00 *A3* 5.35 *B4,S7*		
	Portsmouth, Ohio													
	Weirton, Wheeling, Follansbee, W. Va.								3.90 *W3*		3.60 *W3*	4.65 *W3* 5.35 *F3*	5.75 *W3*	7.20 *W3*
	Youngstown, Ohio Warren, Ohio					$70.00 *Y1, C10*	3.35 *U1, R3*			6.00 *Y1*	3.50 *U1, R3, Y1*	4.65 *R3, Y1* 5.25 *C5,T4* 5.35 *B4*	5.30 *U1, R3* 5.80 *Y1*	6.55 *R3* 7.05 *Y1*
WEST	Fontana, Cal.	$79.00 *K1*	$80.00 *K1*	$75.00 *K1*	$85.00 *K1*	$89.00 *K1*			4.25 *K1*	6.10 *K1*	4.75 *K1*	6.30 *K1*	6.20 *K1*	6.95 *K1*
	Geneva, Utah				$66.00 *C7*				3.65 *C7*	5.50 *C7*				
	Kansas City, Mo.								4.25 *S2*		4.10 *S2*			
	Los Angeles, Calif.				$95.00 *B2*	$90.00 *B2*			4.25 *B2, C7*	6.05 *B2*	4.25 *B2,C7*	6.40 *C1*	6.05 *B2*	
	Minnequa, Colo.								4.10 *C6*		4.55 *C6*			
	San Francisco, Cal.				$85.00 *B2*				4.20 *B2*	6.00 *B2*	4.25 *C7,B2*		6.05 *B2*	
	Seattle, Wash.	$73.00 *S11*			$85.00 *B2*				4.30 *B2*	6.10 *B2*	4.50 *B2*		6.30 *B2*	
SOUTH	Atlanta, Ga.										4.05 *A8*			
	Birmingham, Ala. Alabama City, Ala.			$56.00 *T2*	$66.00 *T2*				3.65 *R3,T2*	5.50 *T2*	3.50 *R3,T2*		5.30 *T2*	
	Houston, Texas		$62.00 *S2*		$74.00 *S2*	$78.00 *S2*			4.05 *S2*		3.90 *S2*			

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

SHEETS									WIRE ROD	TINPLATE†		BLACK PLATE	
Hot-rolled 18 ga. & hvyr.	Cold-rolled	Galvanized 10 ga.	Enameling 12 ga.	Long Terne 10 ga.	Hi Str. Low Alloy H.R.	Hi Str. Low Alloy C.R.	Hi Str. Low Alloy Galv.	Hot-rolled 19 ga.		Cokes* 1.25-lb. base box	Electro* 0.25-lb. base box	Hollaware Enameling 29 ga.	
													Bethlehem, Pa.
3.60 *B3*	4.35 *B3*				5.40 *B3*	6.55 *B3*			4.10 *W6*				Buffalo, N. Y.
										† Special coated mfg ternes deduct 95¢ from 1.25-lb coke base box price. Can-making quality blackplate 55 to 128 lb, deduct $2.20 from 1.25-lb coke base box. * COKES: 1.50-lb, add 25¢. ELECTRO: 0.50-lb, add 25¢;,0.75-lb, add,65¢.			Claymont, Del.
													Coatesville, Pa.
4.00 *A2*					5.65 *A2*								Conshohocken, Pa.
													Harrisburg, Pa.
													Hartford, Conn.
									4.10 *B3*				Johnstown, Pa.
													Newark, N. J.
													New Haven, Conn.
													Phoenixville, Pa.
													Putnam, Conn.
3.60 *B3*	4.35 *B3*	4.80 *B3*			5.40 *B3*	6.55 *B3*	6.75 *B3*		4.20 *B3*	$8.55 *B3*	$7.25 *B3*		Sparrows Pt., Md.
									4.40 *A5*				Worcester, Mass.
									4.20 *R4*				Trenton, N. J.
									4.40 *L1*				Alton, Ill.
3.60 *A7*		4.80 *A7*	4.65 *A7*										Ashland, Ky.
		4.80 *R3*											Canton-Massillon
3.60 *W8*					5.40 *U1*				4.10 *A5,R3, N4*				Chicago, Ill.
3.60 *R3,J3*	4.35 *R3,J3*		4.65 *R3*		5.40 *R3,J3*	6.55 *R3,J3*			4.10 *A5*				Cleveland, Ohio
3.60 *G3* 4.40 *M3*	4.35 *G3*				5.95 *G3*	7.10 *G3*							Detroit, Mich.
													Duluth, Minn.
3.60 *U1, Y1,J3*	4.35 *U1, Y1,I3*	4.80 *U1,I3*	4.65 *U1,I3*	5.20 *U1*	5.40 *U1,I3* 5.90 *Y1*	6.55 *U1,I3* 7.05 *Y1*		5.40 *I3*	4.10 *Y1*	$8.45 *B3, U1, Y1*	$7.15 *U1,I3*	5.85 *U1* 5.30 *Y1*	Gary, Ind. Harbor, Indiana
4.30 *G2*	5.05 *G2*	5.50 *G2*	5.35 *G2*								$7.35 *G2*	6.05 *G2*	Granite City, Ill.
		5.20 *C9*											Kokomo, Ind.
	4.35 *A7*		4.65 *A7*	5.20 *A7*									Middletown, Ohio
6.55 *S1*	5.55 *N3* 6.00 *S1*		6.00 *N3*		5.40 *S1*								Niles, Ohio Sharon, Pa.
3.60 *U1, J3,A7* 4.35 *A3*	4.35 *U1, J3,A7*	4.80 *U1*	4.65 *U1*		5.40 *U1,J3*	6.55 *U1,J3*	7.20 *U1*		4.10 *A5* 4.30 *P6*	$8.45 *U1,J3*	$7.15 *U1,J3*	5.85 *U1*	Pittsburgh, Pa.
									4.30 *P7*				Portsmouth, Ohio
3.60 *W3,W5*	5.35 *F3* 4.35 *W3,W5*	4.80 *W3,W5*		5.20 *W3,W5*	5.75 *W3*	6.90 *W3*				$8.45 *W3,W5*	$7.15 *W3,W5*	6.15 *W5* 5.85 *F3*	Weirton, Wheeling, Follansbee, W. Va.
3.60 *U1, R3,Y1*	4.35 *R3, Y1*	5.50 *R1*	4.65 *Y1*	6.05 *E2*	5.40 *U1,R3* 5.90 *Y1*	6.55 *R3* 7.05 *Y1*		6.05 *R1,E2*	4.10 *Y1*	$8.45 *R3*	$7.15 *R3*		Youngstown, Ohio Warren, Ohio
6.55 *K1*	5.30 *K1*				6.35 *K1*	7.50 *K1*			4.90 *K1*				Fontana, Cal.
3.70 *C7*													Geneva, Utah
													Kansas City, Mo.
4.30 *C7*		5.55 *C7*						5.40 *C7*	4.90 *B2,C7*	$9.20 *C7*	$7.90 *C7*		Los Angeles, Cal.
									4.35 *C6*				Minnequa, Colo.
4.30 *C7*	5.30 *C7*	5.55 *C7*							4.75 *C7*				San Francisco, Cal.
													Seattle, Wash.
													Atlanta, Ga.
3.60 *R3,T2*	4.35 *T2*	4.80 *R3,T2*			5.40 *T2*			4.75 *R3*	4.10 *R3,T2*	$8.55 *T2*	$7.25 *T2*		Birmingham, Ala. Alabama City, Ala.
									4.50 *S2*				Houston, Texas

STEEL PRICES

Italics identify producers listed in key at end of table. Base prices, f.o.b. mill, in cents per lb., unless otherwise noted. Extras apply.

		BARS						PLATES				WIRE
		Carbon Steel	Reinforcing	Cold Finished	Alloy Hot-rolled	Alloy Cold Drawn	Hi Str. H.R. Low Alloy	Carbon Steel	Floor Plate	Alloy	Hi Str. Low Alloy	Mfr's. Bright
EAST	Bethlehem, Pa.				4.30 *B3*	5.40 *B3*	5.55 *B3*					
	Buffalo, N. Y.	3.70 *B3,R3*	3.70 *B3,R3*	4.80 *B5*	4.30 *B3,R3*	5.40 *B3*	5.85 *B3*	3.70 *B3*				4.85 *W6*
	Claymont, Del.							4.15 *C4*		4.85 *C4*		
	Centreville, Pa.							4.15 *L4*		5.25 *L4*		
	Conshohocken, Pa.							4.15 *A2*	4.75 *A2*	5.05 *A2*	5.90 *A2*	
	Harrisburg, Pa.							4.30 *C3*	4.30 *C3*			
	Hartford, Conn.			5.10 *R3*		5.85 *R3*						
	Johnstown, Pa.	3.70 *B3*	3.70 *B3*		4.30 *B3*		5.55 *B3*	3.70 *B3*		4.75 *B3*	5.05 *B3*	4.85 *B3*
	Newark, N. J.			5.00 *W10*		5.75 *W10*						
	New Haven, Conn.											
	Phoenixville, Pa.											
	Putnam, Conn.			5.10 *W10*								
	Sparrows Point, Md.		3.70 *B3*					3.70 *B3*		4.75 *B3*	5.05 *B3*	4.85 *B3*
	Worcester, Mass.					5.75 *A5*						5.15 *A5,W6*
	Trenton, N. J.											
MIDDLE WEST	Alton, Ill.	4.15 *L1*										5.95 *L1*
	Ashland, Ky.							3.70 *A7*				
	Canton-Massillon	3.70 *R3*		4.55 *R3,R2*	3.95 *T5* 4.30 *R3*	4.90 *T5* 5.40 *R3,R2*						
	Chicago, Ill.	3.70 *U1,R3, W8*	3.70 *R3*	4.55 *A5,B5, W8,W10*	4.30 *U1,R3, W8*	5.40 *R3,W8, W10,B5,L3* 5.45 *A5*		3.70 *U1,W8*	4.75 *U1*	4.75 *U1*	5.05 *U1*	5.10 *W1* 4.85 *R3,A5* *K2,N4*
	Cleveland, Ohio	3.70 *R3*	3.70 *R3*	4.55 *A5,C13*		5.45 *A5*	5.55 *R3,J3*	3.70 *R3,J3*	4.75 *J3*		5.05 *R3,J3*	4.85 *A5,C*
	Detroit, Mich.	3.85 *R3*		4.70 *P8,R5* 4.80 *P3*	4.45 *R3* 4.65 *G3*	5.50 *R5* 5.55 *P8* 5.60 *P3*						
	Duluth, Minn.											4.85 *A5*
	Gary, Ind. Harbor, Indiana	3.70 *U1, Y1, I3*	3.70 *U1,I3, Y1*	4.55 *R3,M5, L2*	4.30 *U1,I3, Y1*	5.40 *R3,M5, L2*	5.55 *U1,I3* 6.05 *Y1*	3.70 *U1,I3, Y1*	4.75 *I3*	4.75 *U1*	5.05 *U1,I3* 6.15 *Y1*	5.10 *M4*
	Granite City, Ill.							4.40 *G2*				
	Kokomo, Ind.											4.95 *C9*
	Middletown, Ohio											
	Niles, Ohio Sharon, Pa.							3.95 *S1*		5.20 *S1*	5.70 *S1*	
	Pittsburgh, Pa.	3.70 *U1,J3*	3.70 *U1,J3*	4.55 *R3,A5, J3,S8,W10, C8*	4.30 *U1,C11*	5.40 *C11,S8, W10,C8,A5*	5.55 *U1,J3*	3.70 *U1,J3*	4.75 *U1*	4.75 *U1*	5.05 *U1,J3*	4.85 *A5,J3* 5.10 *P6*
	Portsmouth, Ohio											5.25 *P7*
	Weirton, Wheeling, Follansbee, W. Va.	3.85 *W3*						4.00 *W3,W5*				
	Youngstown, Ohio Warren, Ohio	3.70 *U1,R3, Y1*	3.70 *U1,R3, Y1*	4.55 *Y1,F2*	4.30 *U1, Y1, C10*	5.40 *Y1,C10, F2*	5.55 *U1* 6.05 *Y1*	3.70 *U1,R3, Y1*			5.65 *R3* 6.15 *Y1*	4.85 *Y1*
WEST	Fontana, Cal.	4.40 *K1*	4.40 *K1*		5.35 *K1*		6.60 *K1*	4.30 *K1*		5.70 *K1*	6.25 *K1*	
	Geneva, Utah							3.70 *C7*			5.60 *C7*	
	Kansas City, Mo.	4.30 *S2*	4.30 *S2*		4.90 *S2*							5.45 *S2*
	Los Angeles, Cal.	4.40 *C7,B2*	4.40 *C7,B2*		5.35 *B2*		6.25 *B2*					5.00 *C7,B2*
	Minnequa, Colo.	4.15 *C6*	4.50 *C6*					4.50 *C6*				5.10 *C6*
	San Francisco, Cal.	4.45 *B2* 4.40 *C7*	4.45 *B2* 4.40 *C7*				6.30 *B2*					5.00 *C7*
	Seattle, Wash.	4.45 *B2*	4.45 *B2*				6.30 *B2*	4.60 *B2*			6.55 *B2*	
SOUTH	Atlanta, Ga.	4.25 *A8*	4.25 *A8*									5.10 *A8*
	Birmingham, Ala. Alabama City, Ala.	3.70 *R3,T2*	3.70 *R3,T2*				5.55 *T2*	3.70 *R3,T2*			5.65 *T2*	4.85 *R3,T2*
	Houston, Tex.	4.10 *S2*	4.10 *S2*		4.70 *S2*			4.10 *S2*				5.25 *S2*

UNIVERSITY OF MICHIGAN LIBRARIES

Key to Steel Producers

With Principal Offices

A1 Acme Steel Co., Chicago
A2 Alan Wood Steel Co., Conshohocken, Pa.
A3 Allegheny Ludlum Steel Corp., Pittsburgh
A4 American Cladmetals Co., Carnegie, Pa.
A5 American Steel & Wire Div., Cleveland
A6 Angell Nail & Chaplet Co., Cleveland
A7 Armco Steel Corp., Middletown, O.
A8 Atlantic Steel Co., Atlanta, Ga.

B1 Babcock & Wilcox Tube Co., Beaver Falls, Pa.
B2 Bethlehem Pacific Coast Steel Corp., San Francisco
B3 Bethlehem Steel Co., Bethlehem, Pa.
B4 Blair Strip Steel Co., New Castle, Pa.
B5 Bliss & Laughlin Inc., Harvey, Ill.

C1 California Cold Rolled Steel Corp., Los Angeles
C2 Carpenter Steel Co., Reading, Pa.
C3 Central Iron & Steel Co., Harrisburg, Pa.
C4 Claymont Steel Corp., Claymont, Del.
C5 Cold Metal Products Co., Youngstown
C6 Colorado Fuel & Iron Corp., Denver
C7 Columbia-Geneva Steel Div., San Francisco
C8 Columbia Steel & Shafting Co., Pittsburgh
C9 Continental Steel Corp., Kokomo, Ind.
C10 Copperweld Steel Co., Glassport, Pa.
C11 Crucible Steel Co. of America, New York
C12 Cumberland Steel Co., Cumberland, Md.
C13 Cuyahoga Steel & Wire Co., Cleveland

D1 Detroit Steel Corp., Detroit
D2 Detroit Tube & Steel Div., Detroit
D3 Driver Harris Co., Harrison, N. J.

E1 Eastern Stainless Steel Corp., Baltimore
E2 Empire Steel Co., Mansfield, O.

F1 Firth Sterling Inc., McKeesport, Pa.
F2 Fitzsimmons Steel Corp., Youngstown
F3 Follansbee Steel Corp., Follansbee, W. Va.

G1 Geneva Steel Co., Salt Lake City
G2 Globe Iron Co., Jackson, O.
G3 Granite City Steel Co., Granite City, Ill.
G4 Great Lakes Steel Corp., Detroit

H1 Hanna Furnace Corp., Detroit

I2 Ingersoll Steel Div., Chicago
I3 Inland Steel Co., Chicago
I4 Interlake Iron Corp., Cleveland

J1 Jackson Iron & Steel Co., Jackson, O.
J2 Jessop Steel Corp., Washington, Pa.
J3 Jones & Laughlin Steel Corp., Pittsburgh
J4 Joslyn Mfg. & Supply Co., Chicago

K1 Kaiser Corp., Oakland, Cal.
K2 Keystone Steel & Wire Co., Peoria
K3 Koppers Co., Granite City, Ill.

L1 Lackawanna Steel Co., St. Louis
L2 La Salle Steel Co., Chicago
L3 Lone Star Steel Co., Dallas
L4 Lukens Steel Co., Coatesville, Pa.

M1 Mahoning Valley Steel Co., Niles, O.
M2 McLouth Steel Corp., Detroit
M3 Mercer Tube & Mfg. Co., Sharon, Pa.
M4 Mid-States Steel & Wire Co., Crawfordsville, Ind.
M5 Monarch Steel Co., Inc., Hammond, Ind.
M6 Mystic Iron Works, Everett, Mass.

N1 National Supply Co., Pittsburgh
N2 National Tube Co., Pittsburgh
N3 Niles Rolling Mills Co., Niles, O.
N4 Northwestern Steel & Wire Co., Sterling, Ill.

O1 Oliver Iron & Steel Co., Pittsburgh

P1 Page Steel & Wire Div., Monessen, Pa.
P2 Phoenix Iron & Steel Co., Phoenixville, Pa.
P3 Pilgrim Drawn Steel Div., Plymouth, Mich.
P4 Pittsburgh Coke & Chemical Co., Pittsburgh
P5 Pittsburgh Screw & Bolt Co., Pittsburgh
P6 Pittsburgh Steel Co., Pittsburgh
P7 Portsmouth Div., Detroit Steel Corp., Detroit
P8 Plymouth Steel Co., Detroit

R1 Reeves Steel & Mfg. Co., Dover, O.
R2 Reliance Div. Eaton Mfg. Co., Massillon, O.
R3 Republic Steel Corp., Cleveland
R4 Roebling Sons Co. (John A.), Trenton, N. J.
R5 Rotary Electric Steel Co., Detroit

S1 Sharon Steel Corp., Sharon, Pa.
S2 Sheffield Steel Corp., Kansas City
S3 Shenango Furnace Co., Pittsburgh
S4 Simonds Saw & Steel Co., Fitchburg, Mass.
S5 Sloss Sheffield Steel & Iron Co., Birmingham
S6 Standard Forging Corp., Chicago
S7 Stanley Works, New Britain, Conn.
S8 Superior Drawn Steel Co., Monaca, Pa.
S9 Superior Steel Corp., Carnegie, Pa.
S10 Sweet's Steel Co., Williamsport, Pa.
S11 Seidelhuber Steel Rolling Mill Co., Seattle,

T1 Tonawanda Iron Div., N. Tonawanda, N. Y.
T2 Tennessee Coal, Iron & R. R. Co., Birmingham
T3 Tennessee Products & Chem. Corp., Nashville
T4 Thomas Steel Co., Warren, O.
T5 Timken Steel & Tube Div., Canton, O.
T6 Tremont Nail Co., Wareham, Mass.

U1 United States Steel Co., Pittsburgh
U2 Universal-Cyclops Steel Corp., Bridgeville, Pa.

W1 Wallingford Steel Co., Wallingford, Conn.
W2 Washington Steel Corp., Washington, Pa.
W3 Weirton Steel Co., Weirton, W. Va.
W4 Wheatland Tube Co., Wheatland, Pa.
W5 Wheeling Steel Corp., Wheeling, W. Va.
W6 Wickwire Spencer Steel Co., Buffalo
W7 Wilson Steel & Wire Co., Chicago
W8 Wisconsin Steel Co., S. Chicago, Ill.
W9 Woodward Iron Co., Woodward, Ala.
W10 Wyckoff Steel Co., Pittsburgh

Y1 ▲Youngstown Sheet & Tube Co., Youngstown

Steel Prices

Base price, f.o.b., dollars per 100 lb. *(Metropolitan area delivery add 20¢ except B'ham, San Fran., Cincinnati, New Orleans, St. Paul, add 15¢; Memphis, add 10¢; Phila., add 25¢; N. Y., add 30¢.)

WAREHOUSES — Cities	Sheets: Hot-Rolled	Sheets: Cold-Rolled (15 gage)	Sheets: Galvanized (10 gage)	Strip: Hot-Rolled	Strip: Cold-Rolled	Plates: Standard Structural	Shapes: Standard Structural	Bars: Hot-Rolled	Bars: Cold-Finished	Alloy Bars: Hot-Rolled A 4615 As rolled	Alloy Bars: Hot-Rolled A 4140 Annealed	Alloy Bars: Cold-Drawn A 4615 As rolled	Alloy Bars: Cold-Drawn A 4140 Annealed
Baltimore	5.54–6.44	6.80 7.05	8.20	6 03	.....	6.13	6.13	6 01	6 63	.....	.....	.....	.....
Birmingham*	5.59	6.37	7.20–7.35[1]	5.54	.....	5.85	5.70	5.52	7.60	.....	.....	.....	.....
Boston	6.20	6.98	8.35–8.59	6.15–6.50	7.74–8.70	6.38–6.63	6.20–6.22	6.05–6.88	6.61–6.99	10.25–10.30	10.55–11.50	11.95	12.15–12.25
Buffalo	5.50–5.54	6.28–6.32	8.20–8.23	5.86–6.10	.....	5.89–5.98	5.80–5.82	5.52–5.55	6.18–6.45	10.15	10.45–10.48	11.80	12.10–12.13
Chicago	5.54	6.32	7.85	5.49	.....	5.65–5.70	5.65	5.47	6.05–6.30	.....	10.10	.....	11.75
Cincinnati*	5.84	6.38	8.29	5.77	.....	6.14	6.09	5.75	6.64	.....	10.49	.....	12.14
Cleveland	5.54	6.32	7.96–7.98	5.65	.....	5.82–5.95	5.95–5.98	5.77–5.95	6.15–6.40	.....	10.21	.....	11.86
Detroit	5.76	6.50	8.47	6.15	.....	6.14	6.09	5.74	6.64	.....	10.45	.....	12.10
Houston	6.35–6.96	7.37–8.09	8.57	6.15	.....	6.39–6.42	6.32–6.35	6.38	8.38–8.63	10.95	11.12–11.25	11.40	12.62–12.90
Indianapolis, del'd	5.94	6.72	8.25	5.89	.....	6.10	6.05	5.87	6.80	.....	10.50	.....	.....
Kansas City	6.22–6.40	7.64–7.68	8.66–8.70	6.10–6.90	7.81	6.38–6.74	6.43–6.48	6.20–6.77	7.01–7.22	10.00	10.10	11.50	11.80
Los Angeles	6.30	8.10–8.45	9.30–9.35	6.40	10.45	6.30	6.30	6.25–6.35	8.15	11.30	11.30	13.05	13.50
Memphis*	6.25	7.03	7.51	6.20	.....	6.36	6.36–6.61	6.33–6.57	7.11	.....	.....	.....	.....
Milwaukee	5.70	6.48	8.01	5.65	.....	5.81–5.86	5.81	5.63	6.31–6.61	.....	10.26	.....	.....
New Orleans*	5.98	7.01	8.26	5.93	.....	6.09	6.09	5.91	7.02	.....	.....	.....	.....
New York*	6.09–6.52	6.87–6.91	8.25–8.45	6.27–7.19	7.67	6.44–6.88	6.07–6.40	6.19–6.42	6.99–7.29	10.45	10.48–10.75	12.10	11.40–12.40
Norfolk	6.68	.....	.....	6.33	.....	6.20	6.20	5.95	7.30	.....	.....	.....	.....
Philadelphia*	5.79–6.07	6.72–7.22	8.10–8.38	6.08–6.35	7.15	6.05–6.19	5.84–6.09	6.02–6.27	6.91–7.16	9.82–10.17	10.22–10.47	11.82	11.88–12.12
Pittsburgh	5.54	6.32	7.85–8.25	5.59–5.84	.....	5.65–5.70	5.65	5.47	6.15–6.40	.....	10.10	.....	11.75
Portland	7.25	8.70–9.00	9.10–9.25	7.30	.....	6.80	7.17	7.00	8.65	.....	.....	.....	.....
Salt Lake City	7.95	.....	9.80–10.35	8.00	.....	7.45	7.60	7.95	.....	.....	.....	.....	.....
San Francisco*	6.51–6.59	7.88–8.23	9.10–9.25	6.44–6.60	10.45	6.40–6.50	6.25	6.34–6.45	8.15 8.20	11.30	11.30	13.05	13.50
Seattle	6.14–6.81	7.84–8.44	9.55	7.40–7.70	.....	6.43–6.78	6.50–6.70	6.50	8.80–8.85	.....	.....	.....	.....
St. Louis	5.73–5.82	6.60–7.15	8.13	5.77–6.36	7.66	6.02–6.07	6.02–6.22	5.75–5.80	6.43–6.68	10.08	10.38	11.73	12.03
St. Paul*	6.14	6.92	8.45	6.09	.....	6.25	6.25	6.07	6.75	.....	.....	.....	.....

BASE QUANTITIES (Standard unless otherwise keyed): Cold finished bars; 2000 lb or over. Alloy bars; 1000 to 1999 lb. All others; 2000 to 9999 lb. All HR products may be combined for quantity. All galvanized sheets may be combined for quantity. CR sheets may not be combined with each other or with galvanizing sheets, for quantity.
EXCEPTIONS: (1) 500 to 1499 lb.

STAINLESS STEELS

Base price, cents per lb., f.o.b. mill

Product	301	302	303	304	316	321	347	410	416	430
Ingots rerolling	14.25	15.25	16.75	16.25	24.75	20.00	21.75	12.75	14.75	13.00
Slabs billets rerolling	18.50	20.00	22.00	21.00	32.25	26.25	28.50	16.50	20.00	16.75
Forg. discs die blocks rings	34.00	34.25	36.75	35.75	53.00	40.25	44.75	28.00	28.50	28.50
Billets forging	26.25	26.50	28.50	27.75	41.50	31.25	35.00	21.50	22.00	22.00
Bars wires structurals	31.25	31.50	34.00	33.00	49.25	37.00	41.50	25.75	26.25	26.25
Plates	33.00	33.25	35.25	35.25	52.00	40.75	45.25	27.00	27.50	27.50
Sheets	41.00	41.25	43.25	43.25	57.00	49.25	53.75	36.50	37.00	39.00
Strip hot-rolled	26.50	28.25	32.50	30.25	48.75	37.00	41.25	23.50	30.25	24.00
Strip cold-rolled	34.00	36.75	40.25	38.75	59.00	48.25	52.25	30.50	37.00	31.00

STAINLESS STEEL PRODUCING POINTS—*Sheets:* Midland, Pa., *C11;* Brackenridge, Pa., *A3;* Butler, Pa., *A7;* McKeesport, Pa. *U1;* Washington, Pa., *W2;* (type 316 add 4.5¢) *J2;* Baltimore, *E1;* Middletown, O., *A7;* Massillon, O., *R3;* Gary, *U1;* Bridgeville, Pa., *U2;* New Castle, Ind., *I2;* Ft. Wayne, *J4;* Lockport, N. Y., *R4.*
Strip: Midland, Pa., *C11;* Cleveland, *A3;* Carnegie, Pa., *S9;* McKeesport, Pa., *F1;* Reading, Pa., *C2;* Washington, Pa., *W2;* (type 316 add 4.5¢); W. Leechburg, Pa., *A3;* Bridgeville, Pa., *U2;* Detroit, *M2;* Canton-Massillon, O., *R3;* Middletown, O., *A7;* Harrison, N. J., *D3;* Youngstown, *C5;* Lockport, N. Y., *S4;* New Britain, Conn., *S7;* Sharon, Pa., *S1* (type 301 add ¼¢); Butler, Pa., *A7;* Wallingford, Conn., *W1.*
Bars: Baltimore, *A7;* Duquesne, Pa., *U1;* Munhall, Pa., *U1;* Reading, Pa., *C2;* Titusville, Pa., *U2;* Washington, Pa., *J2;* McKeesport, Pa., *U1, F1;* Bridgeville, Pa., *U2;* Dunkirk, N. Y., *A3;* Massillon, O., *R3;* Chicago, *U1;* Syracuse, N. Y., *C11;* Watervliet, N. Y., *A3;* Waukegan, *A5;* Lockport, N. Y., *S4;* Canton, O., *T5;* Ft. Wayne, *J4.*
Wire: Waukegan, *A5;* Massillon, O., *R3;* McKeesport, Pa., *F1;* Ft. Wayne, *J4;* Trenton, N. J., *R4;* Harrison, N. J., *D3;* Baltimore, *A7;* Dunkirk, *A3;* Monessen, *P1;* Syracuse, *C11;* Bridgeville, *U2.*
Structurals: Baltimore, *A7;* Massillon, O., *R3;* Chicago, Ill., *J4;* Watervliet, N. Y., *A3;* Syracuse, *C11.*
Plates: Brackenridge, Pa., *A3* (type 416 add ½¢); Butler, Pa., *A7;* Chicago, *U1;* Munhall, Pa., *U1;* Midland, Pa., *C11;* New Castle, Ind., *I2;* Lockport, N. Y., *S4;* Middletown, *A7;* Washington, Pa., *J2;* Cleveland, Massillon, *R3.*
Forged discs, die blocks, rings: Pittsburgh, *C11;* Syracuse, *C11;* Ferndale, Mich., *A3;* Washington, Pa., *J2.*
Forging billets: Midland, Pa., *C11;* Baltimore, *A7;* Washington, Pa., *J2;* McKeesport, *F1;* Massillon, Canton, O., *R3;* Watervliet, *A3;* Pittsburgh, Chicago, *U1;* Syracuse, *C11.*
ALLEGHENY LUDLUM—Slightly higher on Type 301; slightly lower on others in 300 series.
WASHINGTON STEEL—Slightly lower on 300 series except where noted.

PIPE AND TUBING

Base discounts, f.o.b. mills. Base price about $200 per net ton.

	BUTTWELD														SEAMLESS					
	½ In.		¾ In.		1 In.		1¼ In.		1½ In.		2 In.		2½-3 In.		2 In.		2½-3 In.		3½-4 In.	
	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.	Blk.	Gal.
STANDARD T. & C.																				
Sparrows Pt. *B3*	34.0	12.0	37.0	16.0	39.0	19.5	40.0	20.0	40.5	21.0	41.0	21.5	41.5	22.0	....	....	....	....	....	....
Cleveland *R3*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	....	....	....	....	....	....
Oakland *K1*	25.0	3.0	28.0	7.0	30.5	10.5	31.0	11.0	31.5	12.0	32.0	12.5	32.5	13.0	....	....	....	....	....	....
Pittsburgh *J3*	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.5	8.0	32.5	11.5	34.5	13.5
Pittsburgh *N2*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
Alton, Ill. *L1*	35.0	13.0	38.0	17.0	40.5	20.5	41.0	21.0	41.5	22.0	42.0	22.5	42.5	23.0	....	....	....	....	....	....
Sharon *M3*	36.0	13.0	39.0	17.0	41.5	21.0	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.0	....	....	....	....	....	....
Pittsburgh *N1*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	....	32.5	....	34.5	....
Wheeling *W5*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	....	....	....	....	....	....
Wheatland *W4*	36.0	14.0	39.0	17.0	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	....	....	....	....	....	....
Youngstown *Y1*	36.0	14.0	39.0	18.0	41.5	21.5	42.0	22.0	42.5	23.0	43.0	23.5	43.5	24.0	29.5	9.5	32.5	12.5	34.5	14.5
EXTRA STRONG, PLAIN ENDS																				
Sparrows Pt. *B3*	33.5	13.0	37.5	17.0	39.5	20.5	40.0	21.0	40.5	22.0	41.0	22.5	41.5	23.0	....	....	....	....	....	....
Cleveland *R3*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	....	....	....	....	....	....
Oakland *K1*	24.5	4.0	28.5	8.0	30.5	11.5	31.0	12.0	31.5	13.0	32.0	13.5	32.5	14.0	....	....	....	....	....	....
Pittsburgh *J3*	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	29.0	7.5	33.0	12.0	36.5	15.5
Pittsburgh *N2*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	10.0	33.0	14.0	36.5	17.5
Alton, Ill. *L1*	32.5	12.0	36.5	16.0	38.5	19.5	39.0	20.0	39.5	21.0	40.0	21.5	40.5	22.0	....	....	....	....	....	....
Sharon *M3*	35.5	14.0	39.5	18.0	41.5	21.0	42.0	21.5	42.5	22.0	43.0	22.5	43.5	23.0	....	....	....	....	....	....
Pittsburgh *N1*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	29.0	....	33.0	....	36.5	....
Wheeling *W5*	35.5	15.0	39.5	19.0	41.5	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	25.0	....	....	....	....	....	....
Wheatland *W4*	35.5	13.5	39.5	17.5	41.5	19.5	42.0	20.5	42.5	21.0	43.0	21.5	43.5	22.5	....	....	....	....	....	....
Youngstown *Y1*	35.5	15.0	39.5	19.0	41.0	22.5	42.0	23.0	42.5	24.0	43.0	24.5	43.5	26.0	29.0	10.0	33.0	14.0	36.5	17.5

Galvanized discounts based on zinc, at 17¢ per lb, East St. Louis. For each 1¢ change in zinc, discounts vary as follows: ½ in., ¾ in., and 1 in., 1 pt.; 1¼ in., 1½ in., 2 in., ¾ pt.; 2½ in., 3 in., ¼ pt. Calculate discounts on even cents per lb of zinc, i.e., if zinc is 16.51¢ to 17.50¢ per lb, use 17¢. Jones & Laughlin discounts apply only when zinc price changes 1¢.

Threads only, buttweld and seamless, 1 pt. higher discount. Plain ends, buttweld and seamless, 3 in. and under, 3½ pts. higher discount. Buttweld jobbers' discount, 5 pct. East St. Louis zinc price now 19.50¢.

COKE

	Net-Ton
Furnace, beehive (f.o.b. oven)	
Connellsville, Pa.	$14.50 to $15.00
Foundry, beehive (f.o.b. oven)	
Connellsville, Pa.	$17.50 to $18.00
Foundry, oven coke	
Buffalo, del'd	$26.69
Chicago, f.o.b.	23.00
Detroit, f.o.b.	24.00
New England, del'd	24.80
Seaboard, N. J., f.o.b.	22.75
Philadelphia, f.o.b.	22.70
Swedeland, Pa., f.o.b.	22.60
Painesville, Ohio, f.o.b.	24.00
Erie, Pa., f.o.b.	23.50
Cleveland, del'd	25.72
Cincinnati, del'd	25.06
St. Paul, f.o.b.	22.50
St. Louis	25.40
Birmingham, del'd	21.69
Neville Island	23.00

ELECTRICAL SHEETS

22 Ga. H-R cut length F.o.b. Mill Cents Per Lb.	Armature	Elec.	Motor	Dynamo	Transf. 72	Transf. 65	Transf. 58
Beech Bottom *W5*	....	7.25	8.50	9.30	9.85	10.40	11.10
Brackenridge *A3*	....	7.25	8.50	9.30	9.85	....	....
Granite City *G3*	....	7.95	9.20	....	....	....	....
Ind. Harbor *B3*	6.75	7.25	....	....	....	....	....
Mansfield *E2*	7.25	7.75	9.00	9.80	....	....	....
Niles, O. *N3*	7.05	7.55	....	....	....	....	....
Vandergrift *U1*	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Warren, O. *R3*	6.75	7.25	8.50	9.30	9.85	10.40	11.10
Zanesville *A7*	6.75	7.25	8.50	9.30	9.85	10.40	11.10

PIG IRON

Dollars per gross ton, f.o.b., subject to switching charges.

Producing Point	Basic	Foundry	Malleable	Bessemer	Low Phos.	Bl. Furnace Silvery	Low Phos. Charcoal
Bethlehem *B3*	54.00	54.50	55.00	55.50	....	....	....
Birmingham *R3*	48.38	48.88	....	....	....	....	....
Birmingham *W9*	48.38	48.88	....	....	....	....	....
Birmingham *S5*	48.38	48.88	....	....	....	....	....
Buffalo *R3*	52.00	52.50	53.00	....	....	....	....
Buffalo *H1*	52.00	52.50	53.00	....	....	63.75	....
Chicago *I4*	52.00	52.50	52.50	53.00	....	....	....
Cleveland *A5*	52.00	52.50	52.50	53.00	57.00	....	....
Cleveland *R3*	52.00	52.50	52.50	....	....	....	....
Daingerfield, Tex. *L3*	48.00	48.50	48.50	....	....	....	....
Duluth *I4*	52.00	52.50	52.50	53.00	....	....	....
Erie *I4*	52.00	52.50	52.50	53.00	....	....	....
Everett, Mass. *M6*	....	59.75	60.25	....	....	....	....
Fontana *K1*	58.00	58.50	....	....	....	....	....
Geneva, Utah *U1,Y1*	52.00	52.50	52.50	53.00	....	....	....
Granite City, Ill. *K3*	53.90	54.40	54.90	....	....	....	....
Hubbard, Ohio *Y1*	52.00	52.50	52.50	....	....	....	....
Ironton, Utah *C7*	52.00	52.50	....	....	....	....	....
Jackson, Ohio *J1,G1*	....	....	....	....	....	62.50	....
Lyle, Tenn. *T3*	....	....	....	....	....	....	66.00
Monessen *P6*	54.00	....	....	....	....	....	....
Neville Island *P4*	52.00	52.50	52.50	53.00	....	....	....
Pittsburgh *U1*	52.00	....	....	53.00	....	....	....
Sharpsville *S3*	52.00	52.50	52.50	53.00	....	....	....
Steelton *B3*	54.00	54.50	55.00	55.50	60.00	....	....
Swedeland *A2*	56.00	56.50	57.00	57.50	....	....	....
Toledo *I4*	52.00	52.50	52.50	53.00	....	....	....
Troy, N. Y. *R3*	54.00	54.50	55.00	....	60.00	....	....
Youngstown *Y1*	52.00	52.50	52.50	53.00	....	....	....
N. Tonawanda, N. Y. *T1*	....	52.50	53.00	....	....	....	....

DIFFERENTIALS: Add 50¢ per ton for each 0.25 pct silicon over base, (1.75 to 2.25 pct, except low phos., 1.75 to 2.00 pct), 50¢ per ton for each 0.50 pct manganese over 1 pct, $2 per ton for 0.5 to 0.75 pct nickel, $1 for each additional 0.25 pct nickel. Subtract 38¢ per ton for phosphorus, content 0.70 pct and over. Silvery Iron: Add $1.50 per net ton for each 0.50 pct silicon over base (6.01 to 6.50 pct) up to 17 pct. $1 per ton for 0.75 pct or more phosphorus, manganese as above. Bessemer ferrosilicon prices are $1 over comparable silvery iron.

BOILER TUBES

Per 1000 ft. cut, 10 to 24 ft. F.o.b. Mill	Size OD-In.	Size B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
Babcock & Wilcox	2	13	22.67	26.66	21.99	25.86
	2½	12	39.48	35.84	29.57	34.76
	3	12	33.90	39.90	32.89	38.70
	3½	11	42.37	49.89	41.10	48.39
	4	10	52.60	61.88	51.03	60.02
National Tube	2	13	21.62	26.48	....	....
	2½	12	29.65	36.32	....	....
	3	12	34.00	41.64	....	....
	3½	11	40.34	49.41	....	....
	4	10	51.21	62.72	....	....
Pittsburgh Steel	2	13	....	27.00	....	....
	2½	12	30.49	37.15	....	....
	3	12	34.95	42.50	....	....
	3½	11	41.48	50.54	....	....
	4	10	52.65	64.16	....	....

CAST IRON WATER PIPE

	Per Net Ton
6 to 24-in., del'd Chicago	$105.30 to $108.80
6 to 24-in., del'd N.Y.	108.50 to 109.50
6 to 24-in., Birmingham	91.50 to 96.00
6-in. and larger, f.o.b. cars, San Francisco, Los Angeles, for all rail shipments; rail and water shipment less	$123.00 to $130.00

Class "A" and gas pipe, $5 extra; 4-in. pipe is $5 a ton above 6-in.

C-R SPRING STEEL

Cents Per Lb. F.o.b. Mill	CARBON CONTENT 0.26–0.40	0.41–0.60	0.61–0.80	0.81–1.05	1.06–1.35
Bridgeport, Conn. *S7*	5.35	6.80	7.40	9.35	11.65
Carnegie, Pa. *S9*	....	6.80	7.40	9.35	11.65
Cleveland *A5*	4.65	6.45	7.40	9.35	11.65
Detroit *D1*	5.60	6.65	7.25	....	....
New Castle, Pa. *B4*	5.35	6.80	7.40	9.35	....
New Haven, Conn. *D1*	5.85	6.75	7.35	....	....
Sharon, Pa. *S1*	5.35	6.80	7.40	9.35	11.65
Weirton, W. Va. *W3*	5.35	6.80	7.40	9.35	11.65
Worcester, Mass. *A5*	4.95	6.75	7.70	9.65	11.95
Youngstown *C5*	....	6.80	7.40	9.35	11.65

MERCHANT WIRE PRODUCTS

F.o.b. Mill	Standard & Coated Nails Base Col.	Woven Wire Fence 9–15½ ga. Base Col.	Fence Posts Base Col.	Single Loop Bale Ties Base Col.	Twisted Barbless Wire Base Col.	Galv. Barbed Wire Base Col.	Merch. Wire Ann'ld ¢/lb.	Merch. Wire* Galv. ¢/lb.
Alabama City *R3*	118	126	....	123	....	136	5.70	5.95
Aliquippa, Pa. *J3*	118	132	....	....	136	140	5.70	6.15
Atlanta *A8*	121	133	....	126	126	143	5.95	6.40
Bartonville *K2*	118	130	....	123	143	143	5.70	6.15
Buffalo *W6*	....	....	....	....	....	....	4.85	....
Cleveland *A6*	125	....	....	....	....	....	....	....
Cleveland *A5*	....	....	....	....	....	....	5.70	6.15
Crawfrdsvl. *M4*	....	132	....	....	....	145	5.95	6.40
Donora, Pa. *A5*	118	130	....	123	140	140	5.70	6.15
Duluth *A5*	118	130	....	123	140	140	5.70	6.15
Fairfield, Ala. *T2*	118	130	....	123	....	140	5.70	6.15
Houston *S2*	126	138	....	....	....	148	6.10	6.55
Johnstn., Pa. *B3*	118	130	....	....	140	....	5.70	6.15
Joliet, Ill. *A5*	118	130	....	123	....	140	6.70	6.15
Kokomo, Ind. *C9*	120	132	....	125	138	142	5.80	6.05
Los Angeles *B2*	....	....	....	....	....	....	6.65	....
Kansas City *S2*	130	....	....	135	....	152	6.30	6.75
Minnequa *C6*	123	138	130	128	146	146	5.95	6.45
Monessen *P6*	124	135	....	....	....	145	5.95	6.40
Moline, Ill. *R3*	....	....	136	....	....	....	....	....
Pittsburg, Cal. *C7*	137	....	....	147	156	160	6.65	6.80
Portsmouth *P7*	124	137	....	....	147	147	6.10	6.60
Rankin, Pa. *A5*	118	130	....	....	140	140	5.70	6.15
So. Chicago *R3*	118	126	140	123	....	136	5.70	5.95
S. San Fran. *C6*	....	....	....	147	....	160	6.65	7.10
Sparrows Pt. *B3*	120	....	....	125	142	142	5.80	6.25
Sterling, Ill. *N4*	118	130	....	123	140	140	5.70	6.15
Struthers, O. *Y1*	....	....	....	....	....	....	5.70	6.15
Torrance, Cal. *C7*	138	....	....	....	....	....	6.65	....
Worcester *A5*	124	....	....	....	....	....	6.00	6.45
Williamsport, Pa. *S10*	....	....	150	....	....	....	....	....

Cut Nails, carloads, base $7.35 per 100 lb. (less 20¢ to jobbers), at Conshohocken, Pa., (*A2*), Wheeling, W. Va., (*W5*), $7.15.

* Alabama City and So. Chicago don't include zinc extra.

Miscellaneous Prices —

RAILS, TRACK SUPPLIES

F.o.b. Mill Cents Per Lb	No. 1 Std. Rails	Light Rails	Joint Bars	Track Spikes	Axles	Screw Spikes	Tie Plates	Track Bolts Treated
Bessemer *U1*	3.60	4.00	4.70	....	....	....	....	....
Chicago *R3*	....	....	....	6.15	....	....	....	....
Cleveland *R3*	....	....	....	....	....	9.35	....	....
Easley *T2*	3.60	4.00	....	....	....	....	....	....
Fairfield *T2*	....	4.00	4.70	6.15	5.60	....	4.50	9.80
Gary *U1*	3.60	4.00	....	....	....	....	4.50	....
Ind. Harbor *I3*	3.60	....	4.70	6.15	5.60	....	4.50	....
Johnstown *B3*	....	4.00	....	....	5.60	....	....	....
Joliet *U1*	....	4.00	4.70	....	....	....	....	....
Kansas City *S2*	....	....	....	6.40	....	....	....	9.85
Lackawanna *B3*	3.60	4.00	4.70	....	....	....	4.50	....
Lebanon *B3*	....	....	....	6.15	....	9.35	....	9.85
Minnequa *C6*	3.60	4.50	4.70	6.15	....	....	4.50	9.85
Pittsburgh *R3*	....	....	....	....	....	9.35	....	....
Pittsburgh *O1*	....	....	....	....	....	9.35	....	9.85
Pittsburgh *P5*	....	....	....	....	....	....	....	9.85
Pittsburgh *J3*	....	....	....	6.15	....	....	4.65	....
Pitts., Cal. *C7*	....	....	....	....	....	....	4.65	....
Seattle *B2*	....	....	....	6.65	....	....	4.65	....
Steelton *B3*	3.60	....	4.70	....	....	....	4.50	....
Struthers *Y1*	....	....	....	6.15	....	....	....	....
Torrance *C7*	....	....	....	....	....	....	4.65	....
Youngstown *R3*	....	....	....	6.15	....	....	....	....

TOOL STEEL

F.o.b. mill

W	Cr	V	Mo	Co	Base per lb
18	4	1	—	—	$1.505
18	4	1	—	5	$2.13
18	4	2	—	—	$1.65
1.5	4	1.5	8	—	81.0¢
6	4	2	6	—	96.5¢

High-carbon chromium ..... 63.5¢
Oil hardened manganese ..... 35¢
Special carbon ..... 32.5¢
Extra carbon ..... 27¢
Regular carbon ..... 23¢

Warehouse prices on and east of Mississippi are 3.5¢ per lb higher. West of Mississippi, 5.5¢ higher.

CLAD STEEL

Stainless-carbon	Plate	Sheet
No. 304, 20 pct.		
Coatesville, Pa. *L4*	*29.5	
Washington, Pa. *J2*	*29.5	
Claymont, Del. *C4*	*28.00	
Conshohocken, Pa. *A2*		*27.50
New Castle, Ind. *I2*	*29.77	*26.24
Nickel-carbon		
10 pct Coatesville, Pa. *L4*	32.5	
Inconel-carbon		
10 pct Coatesville, Pa. *L4*	40.5	
Monel-carbon		
10 pct Coatesville, Pa. *L4*	33.5	
No. 302 Stainless-copper stainless, Carnegie, Pa. *A4*		77.00
Aluminized steel sheets, hot dip, Butler, Pa. *A7*		7.75

*Includes annealing and pickling, or sandblasting.

ELECTRODES

Cents per lb, f.o.b., plant threaded electrodes with nipples, unboxed

Diam. in in.	Length in in.	Cents Per lb.
	GRAPHITE	
17, 18, 20	60, 72	17.85
8 to 16	48, 60, 72	17.85
7	48, 60	19.57
6	48, 60	20.95
4, 5	40	21.50
3	40	22.61
2½	24, 30	23.15
2	24, 30	25.36
	CARBON	
40	100, 110	8.03
35	65, 110	8.03
20	65, 84, 110	8.03
24	72 to 104	8.03
20	84, 90	8.03
17	60, 72	8.03
14	60, 72	8.57
10, 12	60	8.84
8	60	9.10

FLUORSPAR

Washed gravel, f.o.b. Rosiclaire, Ill. Price, net ton; Effective CaF_2 content:
70% or more $43.00
60% or less 40.00

What's New in New Jersey

Draw a circle—a 50-mile radius—from Trenton, New Jersey, and you encompass New York and Philadelphia, which comprise the world's largest market. That fact gives you quick insight into the big *news* about New Jersey, where *new* opportunities for industry are opening all the time.

Drop a small pebble in a pool of water and watch the ripples flow to its edges. In the same way, place a small manufacturing plant in the industrial pool in New Jersey and you can see its products flowing to *new* richer markets.

Many *new* industries in New Jersey are reaching this tremendous buying area today. And there are more *new* markets for local industry which can be reached by overnight freight. A 250-mile radius from Trenton encircles the highest income market in the nation—an area with a population of nearly 48 million people, with an estimated income average of $5,134 per family.

Add a *new* basic steel plant to this area . . . plus *new* research plants, *new* highways, and *new* opportunities for plant sites . . . and you find some of the *new* reasons why industry succeeds in New Jersey, the Crossroads of the East.

For more information on what's new in New Jersey, write Box G, Public Service Electric and Gas Co., 70 Park Place, Newark, N. J., for the new booklet, "An Industrialist's View of the Crossroads of the East."

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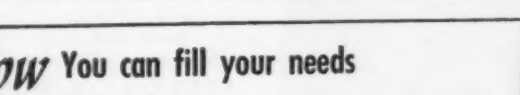
Now You can fill your needs with HELICAL TUBING



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Specialty

As Welded

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Manufacturing Plant—Grand Rapids, Michigan

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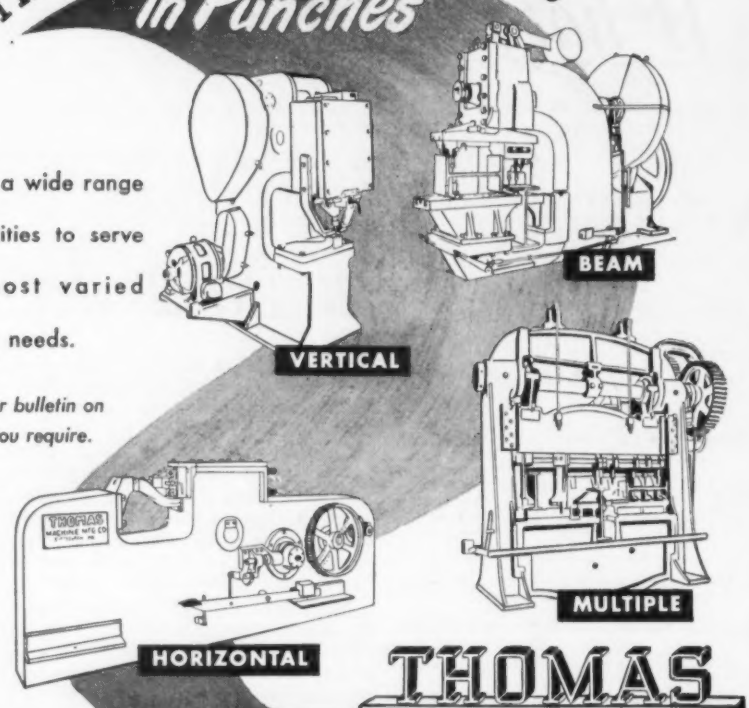
Send for bulletin on type you require.



THOMAS
MACHINE MANUFACTURING COMPANY
PITTSBURGH (23), PA.

24

PUNCHES • SHEARS • PRESSES • BENDERS • SPACING TABLES

25 YEARS OF LEADERSHIP IN FASTENINGS OF STAINLESS STEEL

To YOU, Anti-Corrosive's 25th Anniversary is an assurance that the oldest, largest and best known firm dealing exclusively in stainless steel fastenings is best suited to serve your needs in this field.

Still Plenty of Fastenings IN STOCK

For quick delivery of stainless steel fastenings, check Anti-Corrosive first, since many stock items and alternates are on hand!

FREE - A - N Fastening Selector !

Write for handy slide Chart No. 52K — instantly identifies A-N Nos. pertaining to stainless fastenings, gives sizes, other data. Catalog available.

Anti-Corrosive Metal Products Co., Inc.

1927–1952

Manufacturers of STAINLESS STEEL FASTENINGS

CASTLETON ON HUDSON NEW YORK

—Miscellaneous Prices—

BOLTS, NUTS, RIVETS, SCREWS

Consumer Prices

(Base, discount, f.o.b. mill, Pittsburgh, Cleveland, Birmingham or Chicago)

Nuts, Hot Pressed, Cold Punched—Sq.

Pct Off List

	Less Keg. Reg.	Less Keg. Hvy.	Less K. Reg.	Less K. Hvy.
½ in. & smaller.	15	28½	15	28½
9/16 in. & ⅝ in.	12	25	6½	21
¾ in. to 1½ in. inclusive	9	23	1	16½
1⅝ in. & larger.	7½	22	1	16½

Nuts, Hot Pressed—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in.	16½	29½	6½	21
¾ in. to 1½ in. inclusive	12	25	2	17½
1⅝ in. & larger.	8½	23	2	17½

Nuts, Cold Punched—Hexagon

½ in. & smaller.	26	37	22	34
9/16 in. & ⅝ in.	23	35	17½	30½
¾ in. to 1½ in. inclusive	19½	31½	12	25
1⅝ in. & larger.	12	25	6½	21

Nuts, Semi-Finished—Hexagon

	Reg.	Hvy.		
½ in. & smaller.	35	45	28½	29½
9/16 in. & ⅝ in.	29½	40½	22	34
¾ in. to 1½ in. inclusive	24	36	15	28½
1⅝ in. & larger.	13	26	8½	23
	Light			
7/16 in. & smaller	35	45		
½ in. thus ⅝ in.	28½	39½		
¾ in. to 1½ in. inclusive	26	37		

Stove Bolts

Pct Off List

Packaged, steel, plain finished	48—10
Packaged, plate finish	31—10
Bulk, plain finish**	62*

*Discounts apply to bulk shipments in not less than 15,000 pieces of a size and kind where length is 3-in. and shorter; 5000 pieces for lengths longer than 3-in. For lesser quantities, packaged price applies.

**Zinc, Parkerized, cadmium or nickel plated finishes add 6¢ per lb net. For black oil finish, add 2¢ per lb net.

Rivets

Base per 100 lb

½ in. & larger	$7.85

Cap and Set Screws

(In bulk) *Pct Off List*

Hexagon head cap screws, coarse or fine thread, ¼ in. thru ⅝ in. x 6 in., SAE 1020, bright	54
¾ in. thru 1 in. up to & including 6 in.	48
¼ in. thru ⅝ in. x 6 in. & shorter high C double heat treat	46
⅞ in. thru 1 in. up to & including 6 in.	41
Milled studs	36
Flat head cap screws, listed sizes....	16
Fillister head cap, listed sizes	34
Set screws, sq head, cup point, 1 in. diam. and smaller x 6 in. & shorter	53

Machine and Carriage Bolts

	Pct Off List Less Case	C.
½ in. & smaller x 6 in. & shorter	15	28½
9/16 in. & ⅝ in. x 6 in. & shorter	18½	30½
¾ in. & larger x 6 in. & shorter	17½	29½
All diam. longer than 6 in...	14	27½
Lag, all diam. x 6 in. & shorter	33	35
Lag, all diam. longer than 6 in.	31	33
Plow bolts	34	....

Miscellaneous Prices

REFRACTORIES

Fire Clay Brick

First quality, Ill., Ky., Md., Mo., Ohio, Pa. (except Salina, Pa., add $5)	$94.60
No. 1 Ohio	88.00
Sec. quality, Pa., Md., Ky., Mo., Ill.	88.00
No. 2 Ohio	79.20
Ground fire clay, net ton, bulk (except Salina, Pa., add $1.50)	13.75

Silica Brick

Mt. Union, Pa., Ensley, Ala.	$94.60
Childs, Pa.	99.00
Hays, Pa.	100.10
Chicago District	104.50
Western Utah and Calif.	111.10
Super Duty, Hays, Pa., Athens, Tex., Chicago	111.10
Silica cement, net ton, bulk, Eastern (except Hays, Pa.)	16.50
Silica cement, net ton, bulk, Hays, Pa.	18.70
Silica cement, net ton, bulk, Ensley, Ala.	17.60
Silica cement, net ton, bulk, Chicago District	17.60
Silica cement, net ton, bulk, Utah and Calif.	24.70

Chrome Brick — *Per Net Ton*

Standard chemically bonded balt., Chester	$82.00

Magnesite Brick

Standard, Baltimore	$104.00
Chemically bonded, Baltimore	93.00

Grain Magnesite — *St. %-in. grains*

Domestic, f.o.b. Baltimore in bulk fines removed	$62.70
Domestic, f.o.b. Chewalah, Wash., in bulk	36.30
in sacks	41.80

Dead Burned Dolomite

F.o.b. producing points in Pennsylvania, West Virginia and Ohio, per net ton, bulk Midwest, add 10¢; Missouri Valley, add 20¢	$13.75

LAKE SUPERIOR ORES

51.50% Fe; natural content, delivered lower lake ports. 1952 prices not yet established. 1951 prices were:

Old range, bessemer	$8.70
Old range, nonbessemer	8.55
Mesabi, bessemer	8.45
Mesabi, nonbessemer	8.30
High phosphorus	8.30

After adjustments for analyses, prices will be increased or decreased as the case may be for increases or decreases after Dec. 2, 1950, in lake vessel rates, upper lake rail freights, dock handling charges and taxes thereon.

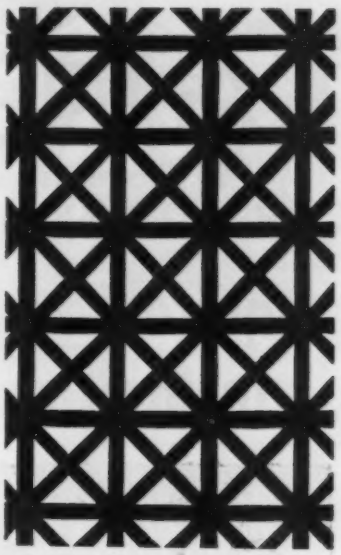
METAL POWDERS

Per pound, f.o.b. shipping point, in ton lots, for minus 100 mesh.

Swedish sponge iron c.l.f. New York, ocean bags	7.4¢ to 9.0¢
Canadian sponge iron, del'd, In East	10.00¢
Domestic sponge iron, 98+% Fe, carload lots	15.5¢ to 17.0¢
Electrolytic iron, annealed, 99.5+% Fe	42.5¢
Electrolytic iron, unannealed, minus 325 mesh, 99+% Fe	53.5¢
Hydrogen reduced iron, minus 300 mesh, 98+% Fe.	63.0¢ to 80.0¢
Carbonyl iron, size 5 to 10 micron, 98%, 99.8+% Fe.	83.0¢ to $1.48
Aluminum	31.5¢
Brass, 10 ton lots	30.00¢ to 33.25¢
Copper, electrolytic	10.75¢ plus metal value
Copper, reduced	10.00¢ plus metal value
Cadmium, 100-199 lb	95¢ plus metal value
Chromium, electrolytic, 99% min., and quantity, del'd	$3.50
Lead	7.5¢ to 12.0¢ plus metal value
Manganese	57.0¢
Molybdenum, 99%	$2.75
Nickel, unannealed	88.0¢
Nickel, annealed	95.0¢
Nickel, spherical, unannealed	92.0¢
Silicon	38.5¢
Solder powder	7.0¢ to 9.0¢ plus met. value
Stainless steel, 302	83.00¢
Stainless steel, 316	$1.10
Tin	14.00¢ plus metal value
Tungstein, 99% (65 mesh)	$6.00
Zinc, 10 ton lots	23.0¢ to 30.5¢

Hendrick Ornametal

TRADE MARK



This is a lightweight type of grille especially suited for radiator enclosures, stove panels, kitchen cabinets, clothes and broom closets, lockers, and similar applications. It is made of a special bright finish, cold rolled steel, suitable for painting or plating, and is available in a wide range of stock size sheets and gauges.

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TIME SAVED ALSO IN NO WORK PACKING!
WORK COMES OUT AS CLEAN AS IT GOES IN! NO SCALE- NO DECARBURIZATION - NO GRINDING AFTERWARDS!
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TIME WASTED HERE IS UNNECESSARY!
DELAWARE CONTROLLED ATMOSPHERE FURNACES ARE FAST HEATING---PROVIDE ACCURATE TEMPERATURE 1200°-2800° F. *QUICKLY*...FOR ANY TYPE OF STEEL- CARBON TO "HIGH SPEED."

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It gives the straight facts on simplified controlled atmosphere heat treating

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3303 MARKET ST., WILMINGTON 99, DELAWARE

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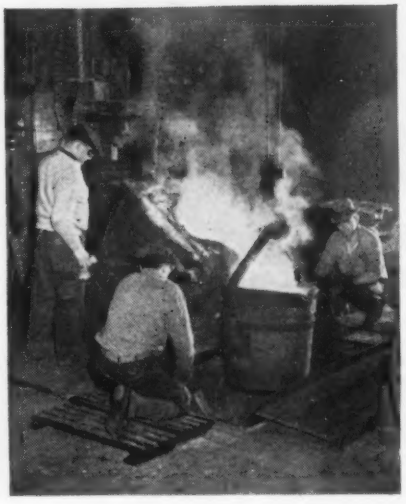
Castings

in Stainless and Special Alloys...

require Control in Melting



Arc or induction melting at Lebanon Steel Foundry is an exacting process, for a heat must duplicate *precisely* the material composition required. Electric melting is but one of many production procedures rigidly followed by Lebanon craftsmen that result in CIRCLE Ⓛ castings of *controlled* high quality.

LEBANON STEEL FOUNDRY
Lebanon, Pennsylvania
"In the Lebanon Valley"

CIRCLE L **LEBANON**
Steel and Alloy Steel
Castings

—Ferroalloy Prices—

Ferrochrome
Contract prices, cents per pound, contained Cr, lump size, bulk, in carloads delivered. (65-72% Cr, 2% max. Si.)

0.06% C	30.50	0.20% C	29.50
0.10% C	30.00	0.50% C	29.25
0.15% C	29.75	1.00% C	29.00
2.00% C			28.75
65-69% Cr, 4-9% C			22.00
62-66% Cr, 4-6% C, 6-9% Si			22.60

S. M. Ferrochrome
Contract price, cents per pound, chromium contained, lump size, delivered.
High carbon type: 60-65% Cr, 4-6% Si, 4-6% Mn, 4-6% C.

Carloads	21.60
Ton lots	23.75
Less ton lots	25.25

Low carbon type: 62-66% Cr, 4-6% Si, 4-6% Mn, 1.25% max. C.

Carloads	27.75
Ton lots	30.05
Less ton lots	31.85

High-Nitrogen Ferrochrome
Low-carbon type: 67-72% Cr, 0.75% N. Add 5¢ per lb to regular low carbon ferrochrome price schedule. Add 5¢ for each additional 0.25% N.

Chromium Metal
Contract prices, per lb chromium contained, packed, delivered, ton lots, 97% min. Cr, 1% max. Fe.

0.10% max. C.	$1.14
0.50% max. C.	1.10
9 to 11% C.	1.08

Low Carbon Ferrochrome Silcon
(Cr 34-41%, Si 42-49%, C 0.65% max.) Contract price, carloads, f.o.b. Niagara Falls, freight allowed; lump 4-in. x down, bulk 2-in. x down, 21.75¢ per lb of contained Cr plus 12.40¢ per lb of contained Si.
Bulk 1-in. x down, 21.90¢ per lb contained Cr plus 12.60¢ per lb contained Si.

Calcium-Silicon
Contract price per lb of alloy, dump delivered.
30-33% Ca, 60-65% Si, 3.00% max. Fe.

Carloads	19.00
Ton lots	22.10
Less ton lots	23.60

Calcium-Manganese—Silicon
Contract prices, cents per lb of alloy lump, delivered.
16-20% Ca, 14-18% Mn, 53-59% Si.

Carloads	20.00
Ton lots	22.30
Less ton lots	23.30

CMSZ
Contract price, cents per lb of alloy, delivered.
Alloy 4: 45-49% Cr, 4-6% Mn, 18-21% Si, 1.25-1.75% Zr, 3.00-4.5% C.
Alloy 5: 50.56% Cr, 4-6% Mn, 13.50-16.00% Si, 0.75 to 1.25% Zr, 3.50-5.00% C.

Ton lots	20.75
Less ton lots	22.00

SMZ
Contract price, cents per pound of alloy, delivered, 60-65% Si, 5-7% Mn, 5-7% Zr, 20% Fe, ½ in. x 12 mesh.

Ton lots	17.50
Less ton lots	19.50

V Foundry Alloy
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. V-5: 38-42% Cr, 17-19% Si, 8-11% Mn.

Ton lots	16.50
Less ton lots	17.75

Graphidox No. 4
Cents per pound of alloy, f.o.b. Suspension Bridge, N. Y., freight allowed, max. St. Louis. Si 48 to 52%, Ti 9 to 11%, Ca 5 to 7%.

Carload packed	18.00
Ton lots to carload packed	19.00
Less ton lots	20.50

Ferromanganese
78-82% Mn, maximum contract base price, gross ton, lump size.

F.o.b. Niagara Falls, Alloy, W. Va., Ashtabula, O.	$185
F.o.b. Johnstown, Pa.	$187
F.o.b. Sheridan, Pa.	$185
F.o.b. Etna, Clairton, Pa.	$188

$2.00 for each 1% above 82% Mn, penalty, $2.15 for each 1% below 78%.
Briquets—Cents per pound of briquet, delivered, 66% contained Mn.

Carload, bulk	10.95
Ton lots	12.55

If you need steel for tomorrow's production...

TURN IN YOUR SCRAP TODAY!

Contact your regular scrap dealer

THE STANLEY WORKS, NEW BRITAIN, CONN.
A. T. & S. PLANT, BRIDGEPORT, CONN.

2

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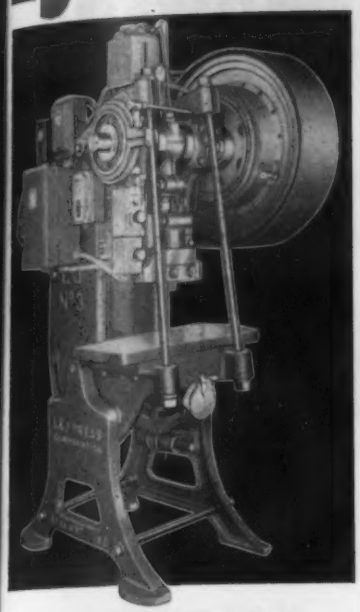
L&J PRESSES



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Higher speeds plus rigidity and accuracy give L & J Presses their outstanding performance. Put these dependable O.B.I. presses to work and you'll see output climb. Tolerances will meet exacting specifications—dies will last longer—and only a minimum of routine maintenance will be needed.

L & J Presses are made in 12 O.B.I. models—back geared and plain flywheel types—and 8 sizes from 6 to 80 ton capacities.

Write for Literature

SPECIFICATIONS

No. 3 Plain Flywheel Press with L & J—Fawick Air Clutch
(Illustrated)

Includes single stroke inching and continuous running. Also variable speed and automatic lubrication. 22 ton capacity, 2½" standard stroke, 8¼" or 10¼" die space (bed to slide, stroke down, adjustment up), 21¼" x 12¾" bolster plate area L. to R. x F. to B., 6¾" throat depth, 10" opening through back, 2,250 pounds net weight.

L&J PRESS CORPORATION
1623 STERLING AVENUE
ELKHART, INDIANA

—Ferroalloy Prices—

Continued

Spiegeleisen

Contract prices gross ton; lump, f.o.b.

	16-19% Mn 3% max. Si	19-21% Mn 3% max. Si
Palmerton, Pa.	$74.00	$75.00
Pgh. or Chicago	75.00	76.00

Manganese Metal

Contract basis, 2 in. x down, cents per pound of metal, delivered.
96% min. Mn, 0.2% max. C, 1% max. Si, 2.5% max. Fe.

Carload, packed	34.75
Ton lots	36.25

Electrolytic Manganese

F.o.b. Knoxville, Tenn., freight allowed east of Mississippi, cents per pound.

Carloads	28
Ton lots	30
Less ton lots	32

Low-Carbon Ferromanganese

Contract price, cents per pound Mn contained, lump size, del'd Mn 85-90%.

	Carloads	Ton	Less
0.7% max. C, 0.06% P, 90% Mn	26.25	28.10	29.30
0.07% max. C	25.75	27.60	28.80
0.15% max. C	25.25	27.10	28.30
0.30% max. C	24.75	26.60	27.80
0.50% max. C	24.25	26.10	27.30
0.75% max. C 7.00% max. Si	21.25	23.10	24.30

Alsifer, 20%Al, 40% Si, 40% Fe, contract basis, f.o.b. Suspension Bridge, N. Y.

Carloads	9.90
Ton lots	11.30

Calcium molybdate, 46.3-46.6% f.o.b. Langeloth, Pa., per pound contained Mo. $1.15

Medium Carbon Ferromanganese

Mn 80% to 85%, C 1.25 to 1.50. Contract price, carloads, lump, bulk, delivered, per lb of contained Mn 19.15¢

Silicomanganese

Contract basis, lump size, cents per pound of metal, delivered, 65-68% Mn, 18-20% Si, 1.5% max. C. For 2% max. C, deduct 0.2¢.

Carload bulk	9.90
Ton lots	11.55
Briquet, contract basis carlots, bulk delivered, per lb of briquet	11.15
Ton lots	12.75

Silvery Iron (electric furnace)

Si 14.01 to 14.50 pct, f.o.b. Keokuk, Iowa, or Wenatchee, Wash., $92.50 gross ton, freight allowed to normal trade area. Si 15.01 to 15.50 pct, f.o.b. Niagara Falls, N. Y., $90.000. Add $1.00 per ton for each additional 0.50% Si up to and including 18%. Add $1.00 for each 0.50% Mn over 1%.

Silicon Metal

Contract price, cents per pound contained Si, lump size, delivered, for ton lots packed.

96% Si, 2% Fe	21.70
97% Si, 1% Fe	22.10

Silicon Briquets

Contract price, cents per pound of briquet bulk, delivered, 40% Si, 2 lb Si briquets.

Carloads, bulk	6.95
Ton lots	8.55

Electric Ferrosilicon

Contract price, cents per pound contained Si, lump, bulk, carloads, delivered.

25% Si	20.00	75% Si	14.30
50% Si	12.40	85% Si	15.55
90.95% Si			17.50

Calcium Metal

Eastern zone contract prices, cents per pound of metal, delivered.

	Cast	Turnings	Distilled
Ton lots	$2.05	$2.95	$3.75
Less ton lots	2.40	3.30	4.55

Turn Page

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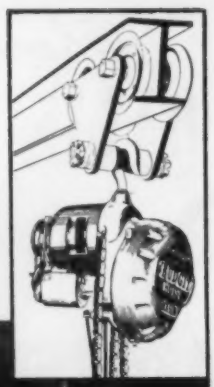

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—Ferroalloy Prices—

Continued

Ferrocolumbium, 50-60%, 2 in. x D, contract basis, delivered, per pound contained Cb.
Ton lots $4.90
Less ton lots 4.95

Ferro-Tantalum-Columbium, 20% Ta, 40% Cb, 0.30 C. Contract basis, delivered, ton lots, 2 in. x D, per lb of contained Cb plus Ta $3.75

Ferromolybdenum, 55-75%, f.o.b. Langeloth, Pa., per pound contained Mo. $1.41

Ferrophosphorus, electrolytic, 23-26%, car lots, f.o.b. Siglo, Mt. Pleasant, Tenn., $3 unitage, per gross ton $65.00
10 tons to less carload $75.00

Ferrotitanium, 40%, regular grade, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti..... $1.35

Ferrotitanium, 25%, low carbon, 0.10% C max., f.o.b. Niagara Falls, N. Y., and Bridgeville, Pa., freight allowed, ton lots, per lb contained Ti $1.50
Less ton lots 1.55

Ferrotitanium, 15 to 18%, high carbon, f.o.b. Niagara Falls, N. Y., freight allowed, carload per net ton $177.00

Ferrotungsten, standard, lump or ¼ x down, packed, per pound contained W,5 ton lots, delivered $5.00

Ferrovanadium, 35-55% contract basis, delivered, per pound, contained V.
Openhearth .....$3.00-$3.10
Crucible 3.10- 3.20
High speed steel (Primos) 3.20- 3.25

Molybdic oxide, briquets or cans, per lb contained Mo, f.o.b. Langeloth, Pa. $1.14
bags, f.o.b. Washington, Pa., Langeloth, Pa. $1.13

Simanal, 20% Si, 20% Mn, 20% Al, contract basis, f.o.b. Philo, Ohio, freight allowed, per pound
Carload, bulk lump ..... 14.50¢
Ton lots, bulk lump ..... 15.75¢
Less ton lots, lump ..... 16.25¢

Vanadium Pentoxide, 86-89% V_2O_5 contract basis, per pound contained V_2O_5 ..... $1.23

Zirconium, 35-40%, contract basis, f.o.b. plant, freight allowed, per pound of alloy.
Ton lots ..... 21.00¢

Zirconium, 12-15%, contract basis, lump, delivered, per lb of alloy.
Carload, bulk ..... 7.00¢

Boron Agents

Borosil, contract prices per lb of alloy, del. f.o.b. Philo, Ohio, freight allowed, B, 3-4%, Si, 40-45%, per lb contained B.... $5.25

Bortam, f.o.b. Niagara Falls
Ton lots, per pound ..... 45¢
Less ton lots, per pound.... 50¢

Corbortam, Ti, 15-21%, B, 1-2%, Si, 2-4%, Al, 1-2%, C 4.5-7.5%, f.o.b. Suspension Bridge, N. Y., freight allowed.
Ton lots, per pound ..... 10.00¢

Ferroboron, 17.50% min. B, 1.50% max. Si, 0.50% max. Al, 0.50% max. C, 1 in. x D. Ton lots.... $1.20
F.o.b. Wash., Pa.; 100 lb up
10 to 14% B..... .85
14 to 19% B..... 1.20
19% min. B 1.50

Grainal, f.o.b. Bridgeville, Pa., freight allowed, 100 lb and over.
No. 1 ..... $1.00
No. 6 ..... 68¢
No. 79 ..... 50¢

Manganese-Boron, 75.00% Mn, 15-20% B, 5% max. Fe, 1.50% max. Si, 3.00% max. C, 2 in. x D, del'd
Ton lots $1.44
Less ton lots 1.57

Nickel-Boron, 15-18% B, 1.00% max. Al, 1.50% max. Si, 0.50% max. C, 3.00% max. Fe, balance Ni, delivered.
Less ton lots $1.80

Silcaz, contract basis, delivered.
Ton lots ..... 45.00¢

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CRANE
5 ton Niles 56' 4" Span, Three 440 volt 3 phase 60 cycle motors.

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NEWS OF USED, REBUILT AND SURPLUS MACHINERY

No Action—Despite rumors that the much-hoped-for amendment to Ceiling Price Reg. 80 might be passed prior to the Machinery Dealers National Assn. Convention in New York, May 8-10, nothing has happened. The amendment is still being mulled over by the Office of Price Stabilization.

Continued OPS delay came as no surprise to machinery dealers at the convention. They have become justifiably cynical about governmental action as deadline after deadline has passed while the price base of January, 1951 remains in effect.

In the difficult role of government spokesman addressing a convention of used machinery dealers, Ralph Irwin, chief of OPS Machine Tool Section, was unable to give an official forecast on when the amendment might be passed. The proposal now being considered would advance the ceiling price base to Dec. 15, 1951, Mr. Irwin stated, and a price book using this date is being compiled. The book will not be issued until the amendment is passed.

Plan Rejected — One MDNA member suggested Washington give the association a complete listing of January '51 prices which the MDNA could use in compiling an interim price book of its own. This would save dealers payments to manufacturers for price information and eliminate calls to Washington for ceiling checks. The idea was rejected.

Mr. Irwin predicted continuance of price controls in the used machinery business for a long time. He also indicated periodic reappearance of controls in the future whenever emergencies arise.

Who's Renegotiable?—A few intricacies of renegotiation were ironed out during the convention by H. Masie Smoot, a member of the Renegotiation Board. However, even after Mr. Smoot's informative talk most dealers viewed their own renegotiation problems as difficult.

In explaining renegotiation, Mr. Smoot stated that any dealer whose machinery sales for defense work total $250,000 or more is open to examination. Defense sales below this amount must be reported. But if the statement is in order the case is dropped. Machinery brokers are subject to renegotiation on defense work commissions of $25,000 or more.

The only way a dealer can find out if he is subject to renegotiation on a particular sale, Mr. Smoot added, is to ask his customer if the machine is for use in defense work. In the case of a machine purchased to do only 20 pct defense work, the dealer can be renegotiated on only 20 pct of his sales price. (For more complete information on renegotiation see News Section.)

European Threat — Increasing threat of European machine tool production was underscored in talks by Tell Berna, general manager of the National Machine Tool Builders Assn., and George Sullivan, managing editor of IRON AGE. It was pointed out that new European tools not only compete with sales of new and used machinery in the U. S. but point to an eventual loss of Europe as an American market.

Mr. Sullivan predicted a bright future for industry generally. His optimism was based on population growth and increased per capita consumption of industry's products.

New Officers — The convention was attended by an enthusiastic crowd of nearly 300, and membership in the association reached 210. Two new officers were elected at the meeting: Thomas J. O'Brien, The O'Brien Machinery Co., Philadelphia, first vice-president; and Louis Botwinik, Botwinik Bros., New Haven, Conn., second vice-president.